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A NEW BOOK! | **Manhold & Bolden—OUTLINE OF PATHOLOGY**
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A Functional Approach to Neuroanatomy

By E. Lawrence House, Ph.D., Associate Professor of Anatomy, New York Medical College, and Ben Pansky, Ph.D., Assistant Professor of Anatomy, New York Medical College. 494 pp., 7¼″ × 9⅛″, 360 illustrations, $12.50

Prepared with the needs of the medical student continually in mind, this work presents basic neuroanatomy in a stimulating fashion. Using a functional, yet systematic approach, the authors integrate clinical considerations into practically every chapter, including testing and symptoms of neurologic disorders.

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Principles of Surgical Practice

By Emanuel Marcus, M.D., Ph.D., F.A.C.S., Professor of Surgery, Chicago Medical School, and Leo M. Zimmerman, M.D., F.A.C.S., Professor and Chairman, Department of Surgery, Chicago Medical School. 430 pp., 7¼″ × 9⅛″, 76 illustrations, $12.50

This new textbook is based on the authors' experience in teaching a principles course at the Chicago Medical School for many years. This work considers those basic principles of surgery a physician truly needs to have in mind in his practice. It also considers such topics as wound healing, sterilization, and fluid and electrolyte balance—an understanding of which is fundamental. Each chapter is introduced by an outline which permits the student to realize at a glance the relative importance of any particular statement or exposition to the subject as a whole. Each chapter is concluded with a summary that correlates with the outline and text, emphasizing those points which are particularly important to an understanding of the practice of surgery. The exclusion of surgical technic material enables the authors to present an unconfused exposition of those principles fundamental to good surgical practice.

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From the Original Text of JOSEPH B. DELEE, M.D. By J. P. GREENHILL, M.D., Senior Attending Obstetrician and Gynecologist, the Michael Reese Hospital; Obstetrician, Associate Staff, The Chicago Lying-In Hospital; Attending Gynecologist, Cook County Hospital; Professor of Gynecology, Cook County Graduate School of Medicine. 1098 pages, 7" × 10", with 1219 illustrations on 903 figures, 119 in color. $17.00.
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By BENJAMIN FELSON, M.D., Professor and Director, Department of Radiology, University of Cincinnati College of Medicine; Director, Departments of Radiology, Cincinnati General, Children's, Daniel Drake, Dunham, Christian R. Holmes, and Longview Hospitals; Special Consultant, U.S. Public Health Service; Consultant to the Dayton and Cincinnati Veterans Administration Hospitals. About 304 pages, 6¾" × 10", with 550 illustrations on 238 figures. About $11.00. *New—Just Ready!*

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Edited by THEODORE C. RUCH, Ph.D., Professor and Executive Officer, Department of Physiology and Biophysics, University of Washington School of Medicine; and JOHN F. FULTON, M.D., Sterling Professor of the History of Medicine, Yale University School of Medicine; with the collaboration of 22 authorities, 6¼" × 10", with 616 illustrations. $16.00. *New (18th) Edition!*

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By JOHN H. MANHOLD, JR., D.M.D., M.A., F.A.C.D., Professor, and Director of Pathology and Oral Diagnosis for the College of Dentistry, Seton Hall College of Medicine and Dentistry; and THEODORE E. BOLDEN, D.D.S., M.S., Ph.D., Assistant Professor of Oral Diagnosis and Pathology, Seton Hall College of Medicine and Dentistry. About 310 pages, 5½" × 7½". About $4.50. *New—Just Ready!*

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The Journal of Medical Education serves as an international medium for the exchange of ideas in medical education, as well as a means of communicating the policies, programs, and problems of the Association. The Editorial Board welcomes the submission of manuscripts concerned with the broad field of medical education; this includes preparation for medical education; the medical school experience; intern and resident education; graduate and postgraduate medical education. The Editorial Board recognizes that medical education includes the activities of faculty, students, administrators, and those of the practicing profession who also teach and learn. Thus, it invites communications from any of these sources.

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Galley proofs will be mailed to authors for correction before publication and should be returned within 48 hours after receipt.

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Medical Education Forum includes editorials, letters, comments, criticisms, and excerpts from important addresses.

News from the Medical Schools: Material for this section should be transmitted to the News Editor, Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

Items of Current Interest: Audio-visual news and notices from national and federal agencies appear in this section.

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Address all correspondence regarding manuscripts, editorials, and letters to the Editor to the Editorial Office, University Hospitals, University of Wisconsin, Madison 6, Wisconsin.

Address all correspondence concerning reprints to the University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. Address all correspondence concerning subscriptions, change of address, and back numbers to the Association of American Medical Colleges, 2530 Ridge Ave., Evanston, Ill. All changes of address should provide both the old and the new address.

Address all correspondence concerning news, announcements, and personnel exchange to the office of the Association of American Medical Colleges, % Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois; address all correspondence concerning advertising to Miss Helen Claire Herman, 2530 Ridge Avenue, Evanston, Illinois.

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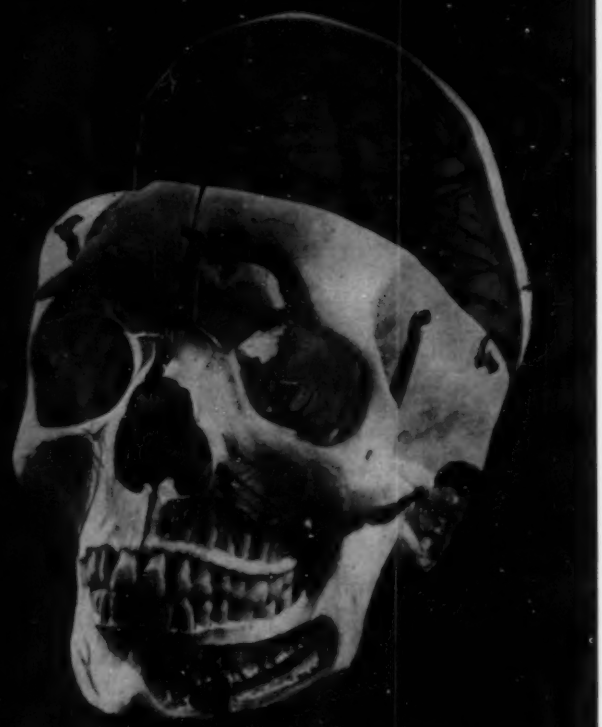

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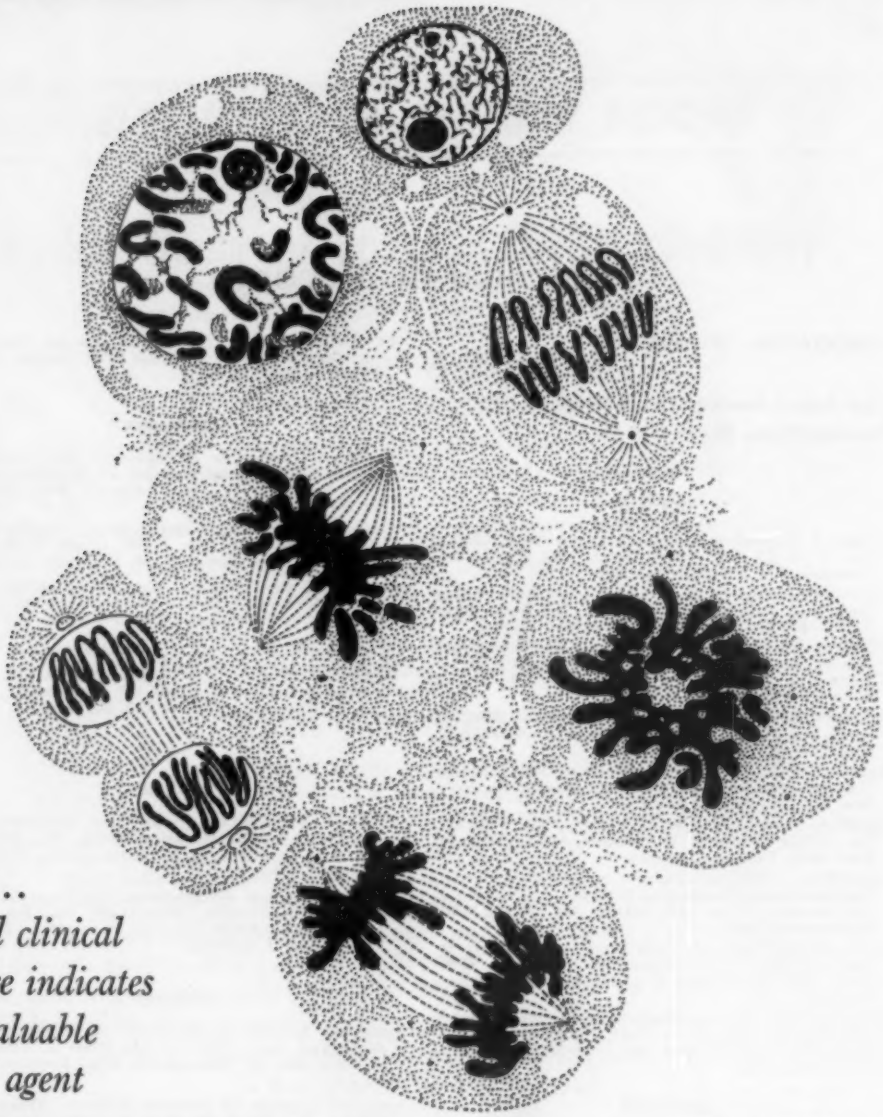

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ASSOCIATION OF AMERICAN MEDICAL COLLEGES

71st Annual Meeting, Oct. 30–Nov. 1, 1960
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1960

OCTOBER

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 17–20. Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Ill., Executive Director.

AMERICAN COLLEGE OF GASTROENTEROLOGY, Bellevue-Stratford Hotel, Philadelphia, Oct. 23–26. Mr. Daniel Weiss, 33 W. 60th St., New York 23, Executive Director.

AMERICAN FRACTURE ASSOCIATION, El Presidentia Hotel, Mexico, D. F., Mexico, Oct. 30–Nov. 4. Dr. H. W. Wellmerling, 610 Griesheim Bldg., Bloomington, Ill., Executive Secretary.

AMERICAN HEART ASSOCIATION, INC., Jefferson Hotel, St. Louis, Oct. 21–25. Mr. Rome A. Betts, 44 E. 23rd St., New York 10, Executive Director.

AMERICAN PUBLIC HEALTH ASSOCIATION, San Francisco, Oct. 31–Nov. 4. Dr. Berwyn F. Mattison, 1790 Broadway, New York 19, Executive Director.

AMERICAN SCHOOL HEALTH ASSOCIATION, San Francisco, Oct. 30–Nov. 4. Dr. A. O. DeWeese, 515 E. Main St., Kent, Ohio, Executive Secretary.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, Mayflower Hotel, Washington, D.C., Oct. 31–Nov. 2. Lt. Col. George M. Beam, AUS Retired, 1726 Eye St., N.W., Washington 6, D.C.

ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS, Jack Tar Hotel, San Francisco, Oct. 26–28. Dr. A. C. Offutt, 1330 W. Michigan St., Indianapolis 7, Secretary-Treasurer.

INTERSTATE POSTGRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, Pittsburgh-Hilton Hotel, Pittsburgh, Oct. 31–Nov. 3. Mr. Roy T. Ragatz, Box 1099, Madison 1, Wis., Executive Director.

NOVEMBER

AMERICAN MEDICAL WRITERS' ASSOCIATION, Hotel Morrison, Chicago, Nov. 18–19. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Biltmore Hotel, Los Angeles, Nov. 2–5. Dr. Rolla B. Hill, 3575 St. Gaudens R., Miami 33, Fla., Executive Secretary.

ASSOCIATION OF CLINICAL SCIENTISTS, Shoreham Hotel, Washington, D.C. (Applied Seminar on Measurements of Pancreatic Function in Clinical Medicine, Nov. 4–5. Dr. F. William Sunderman, 1025 Walnut St., Philadelphia 7), Annual Meeting, Nov. 6. Dr. Robert P. MacFate, 54 W. Hubbard St., Chicago 10, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH, Drake Hotel, Chicago, Nov. 4–5. Dr. Austin S. Weisberger, 2065 Adelbert Rd., Cleveland 6, Secretary.

PUERTO RICO MEDICAL ASSOCIATION, Santurce, Nov. 15–19. Mr. Jesus A. Sanchez, P.O. Box 9111, Santurce 29, P.R., Executive Secretary.

DECEMBER

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 3–8. Dr. Robert R. Kierland, First National Bank Bldg., Rochester, Minn., Secretary-Treasurer.

AMERICAN RHEUMATISM ASSOCIATION, Sheraton Dallas Hotel, Dallas, Texas, Dec. 9. Mr. Gerard W. Speyer, 10 Columbus Circle, New York 19, Executive Secretary.

CONFERENCE ON GRADUATE MEDICAL EDUCATION—"EDUCATIONAL PROBLEMS IN THE INTERSHIP AND RESIDENCY," University of Pennsylvania Graduate School of Medicine, Dec. 1–2. For information write Dr. Paul Nemir Jr., 237 Medical Laboratories Bldg., Philadelphia 4, Dean.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, Netherland Hilton Hotel, Cincinnati, Dec. 4–9. Dr. Donald S. Childs, 713 E. Genesee St., Syracuse 2, N.Y., Secretary.

1961

JANUARY

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Hotel Americana, Bal Harbour, Miami Beach, Fla., Jan. 8–13. Mr. John K. Hart, 116 S. Michigan Ave., Chicago 3, Executive Secretary.

AMERICAN COLLEGE OF SURGEONS, SECTIONAL MEETING, Hotel Dinkler-Tutwiler, Birmingham, Ala., Jan. 16–18. Dr. William E. Adams, Am. Coll. of Surgeons, 40 E. Erie St., Chicago 11, Secretary.

FEBRUARY

AMERICAN ACADEMY OF ALLERGY, Statler-Hilton Hotel, Washington, D.C., Feb. 6–8. Mr. James O. Kelley, 756 N. Milwaukee St., Milwaukee 2, Wis., Executive Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Drake Hotel, Chicago, Feb. 23–25. Dr. W. J. R. Camp, 1853 W. Polk St., Chicago 12, Secretary-Treasurer.

AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE, Statler Hotel, Detroit, Feb. 8–10. Dr. Paul J. Whitaker, Allis-Chalmers Mfg. Co., P. O. Box 512, Milwaukee 1, Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Drake Hotel, Chicago, Feb. 8–11. William C. Stronach, LL.B., 20 N. Wacker Drive, Chicago 6, Executive Director.

Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 4-7. For information write Mrs. Ann Tipner, A. M. A., 535 N. Dearborn, Chicago 10.

SOCIETY OF UNIVERSITY SURGEONS, University of Kansas Medical School, Kansas City, Kan., Feb. 9–11. Dr. Ben Eiseman, 4200 E. Ninth Ave., Denver 20, Secretary.

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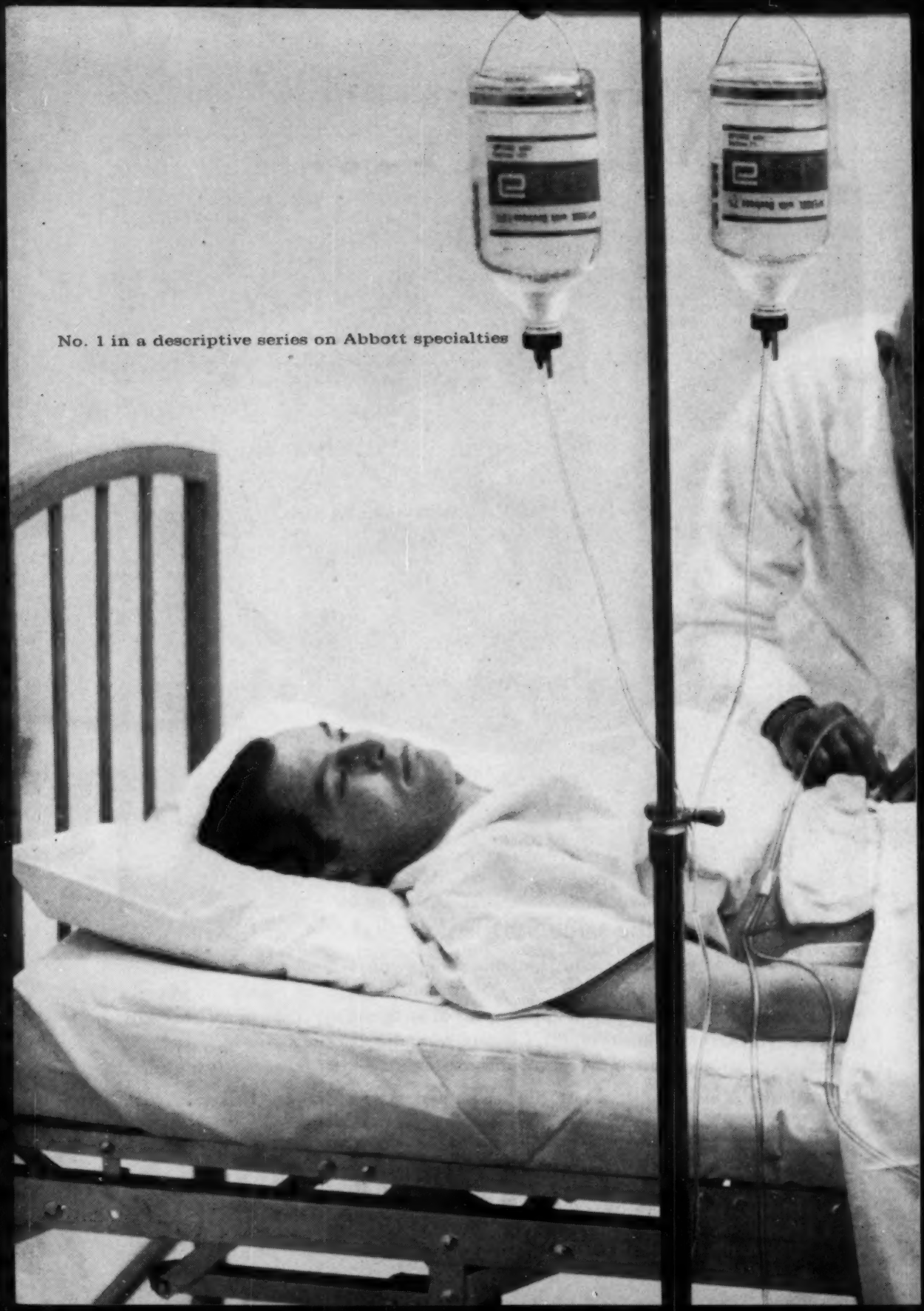
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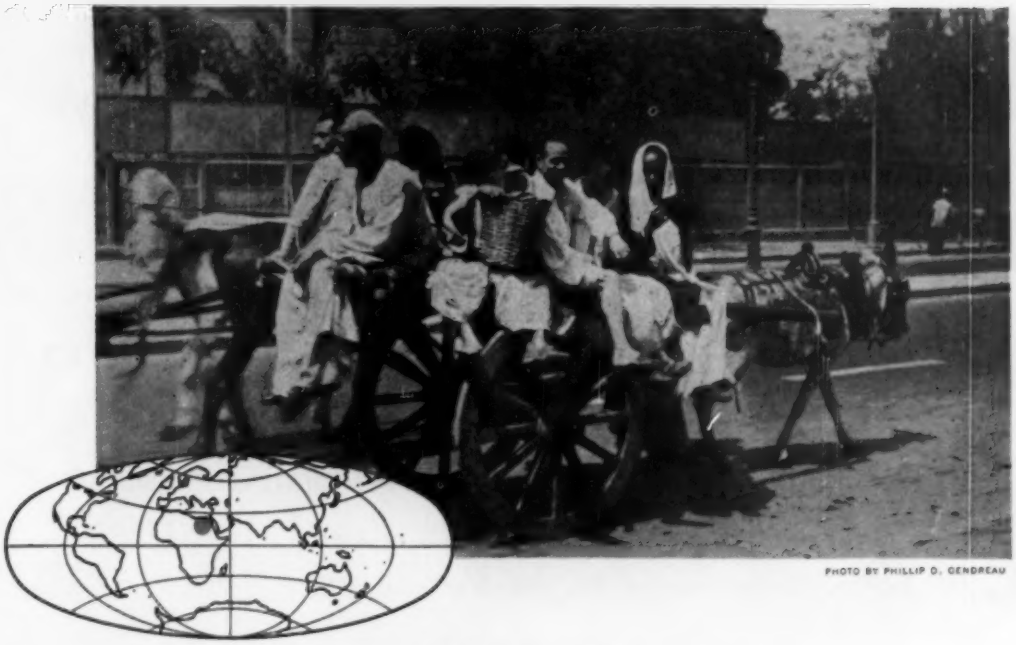

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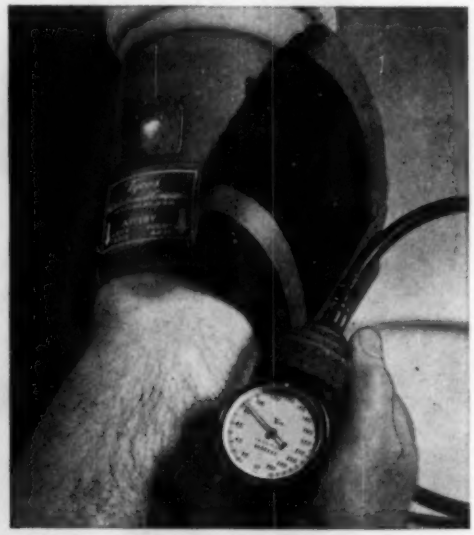

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Essays on Graduate Education

I. The Objectives of Undergraduate Medical Education*

HUGO DUNLAP SMITH, M.D.†

Children's Hospital Research Foundation and the Department of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, Ohio

Few members of any medical school faculty received their appointments because of ability to teach. Likewise, relatively few new faculty members have been given any indoctrination concerning the educational objectives of their departments and schools. Instead, those who instruct undergraduate medical students frequently must depend upon their own experiences to acquire their talent for the art of medical teaching. Consequently, from time to time it is especially important to consider the objectives of undergraduate medical education.

That the purpose of all medicine is to bring medical knowledge to the patient and that in a general sense the purpose of medical education is to prepare physicians to treat disease and safeguard the health of people are generally conceded. However, in this age of rapidly expanding medical factual knowledge, a more precise understanding of the objectives of undergraduate medical education becomes of increasing importance if unnecessary prolongation of the period of training through inefficiency of teaching is to be avoided. A decision must be reached concerning how much the pupil should know and what capabilities he should have following his graduation from medical school and the termination of the faculty's opportunity to influence him. Should he be drilled concerning all the detailed factual knowledge and all the techniques needed in order to be an expert in his field? Or should he be schooled in basic medical concepts and have nurtured within him those capacities and skills necessary to deal with and to solve medical problems. This choice of approach is so well illustrated by an allegory of Alan Gregg's that, despite its length, I should like to quote it in full.

In my salad days I once went on a six weeks' hunting and fishing trip in Canada with a young friend. We planned to live off the country, just as a medical student plans to live intellectually and financially from the experiences of his practice. What should we pack into the limited space of our canoe to enable us to live? Please keep in mind that you can substitute the word "curriculum" for the word "canoe" throughout this allegory.

On Monday morning at a quarter of seven, I went down to the pier. Soon George turned up, but when I saw what he had brought in his jalopy to pack in that canoe as what he might need during the next six weeks, I wondered what powers of argument I possessed that would talk him out of trying to get it all into our canoe. Now, I am not good at argument, so I told him I wanted to go up to the post office and to go ahead with the packing. When I came back the gunwale of the canoe was only half an inch above the gentle ripples of the lake. This was

* This material was presented in part before the meeting of the Ohio Chapter of the American Academy of Pediatrics, Granville, Ohio, May 16, 1959, and the meeting of the Region VI Committee on Medical Education of the American Academy of Pediatrics, Ann Arbor, Michigan, March 5 and 6, 1959.

† Associate Professor of Pediatrics, University of Cincinnati College of Medicine.

better than any argument would have been. "What are we going to do," he said. "We can't afford two canoes." I looked at the cargo and spied three cans of salmon. "George," I said, "I thought we were going to catch fish," and then seeing some cans of tongue and ham, I asked, "Isn't our meat out there, fresh and waiting to be shot? Aren't we going to live off the country of our experience?" And then, to drive the point home, I added, "You haven't put in all the wood we're going to burn, either. But George, have you put in an axe?" He said he had. "Then we have got the wood, practically, even if it is still out there waiting for us. You know, George, we've got to pack this canoe with what we're going to use—not with all we need but with what we'll be using to get what we need. All we need are dry matches, salt, a tent, blankets, plenty of fishhooks and line, and guns and ammunition, and the bag of rice against a day or so of bad luck." Well, we repacked the canoe on what some people would call a functional basis—and the gunwale was almost a foot above the waterline.

I cannot expand this allegory for lack of time, but I will say this about the medical curriculum: you can't pack into four years all the facts that a doctor will need for the rest of his professional life, and it is high time we reviewed the four years of medicine from the point of view of what abilities and capacities he will be using—not facts to be remembered but capacities to be exercised (1).

If one defines "capacities" to include areas of firm understanding as well as skills, this allegory seems to me to depict with rare clarity and discernment what it is that, during his undergraduate medical training, the student should be taught to know and to be capable of doing; that is, he should be provided with a thorough grasp and understanding of those principles of basic medical science and those qualities of thought process and organization which will equip him to cope with medical problems, to care for and understand people, to learn from his own experience, and to be professional in his practice of medicine as it exists today and as it grows and changes. By teaching in terms of the application of basic concepts of preclinical medical science rather than attempting to supply a large body of factual knowledge, a faculty can provide its students with the ability, skills, and attitudes necessary to deal with, and to solve, not only the problems already at hand but also those yet to be faced. Admittedly from such a program would come a graduate somewhat less efficient during the early months of his practice than had he been given specific recipes for the treatment of 1001 typical medical situations; on the other hand, the student schooled in principles and their use rather than in facts, will have a far greater capacity for growth and independent learning. Medical schools, therefore, should not attempt to turn out a student who has been drilled in detailed knowledge concerning every medical and related discipline, but rather a student who, knowing the basic principles, can assimilate the facts and can profitably proceed to postgraduate training. The postdoctoral program in turn, while focusing on special technical proficiency and providing detailed factual knowledge and specific technical skills, can do so in such a way as to refine and strengthen his grasp of the principles and his capacity to use them.

In placing such emphasis upon capacities and understanding, undergraduate medical education does not stand alone. As is true for every other field of education, so medical education to be good requires a prolonged process, each step of which must be related both to what has gone before and what is to follow, providing thereby a gradual and orderly expansion of the student's scholarly judgment and knowledge. Accordingly, although more specialized than the collegiate instruction that precedes, medical education must continue the orderly educational processes initiated during premedical schooling by furthering the training of the student's mind in the application of disciplined and self-reliant thought—now focusing on problems concerning health and disease in man—and by imparting sufficient intellectual self-discipline to insure continuance of the pupil's education from the experiences he encounters in postgraduate situations.

CONTENT OF THE CURRICULUM

In the light of the preceding comments, what factual content should the medical

curriculum encompass? Certainly, the backbone of the training of a physician is to provide him with *a thorough knowledge of the principles of anatomy, physiology, biochemistry, pathology, bacteriology, pharmacology, and basic psychiatry* upon which an understanding of the clinical aspects of medicine can be based. These principles are taught primarily in the preclinical courses after which it is the responsibility of the clinical instructors to help the student learn to apply this knowledge to clinical medicine and the care of patients. A basic science teacher may argue that he is teaching facts concerning his particular discipline rather than principles, and perhaps this is true; but these "facts" of the preclinical subjects become the cornerstones of clinical medicine. Furthermore, it matters little that each faculty member may have a somewhat different concept of exactly what the principles are, as long as each teacher attempts to think and teach in terms of common denominators. How much more difficult it would be for the student to recall all the pertinent facts about tuberculosis of the kidney, as an example, than it would be to think in terms of the normal functions of the kidney, of how disturbances of these functions might manifest themselves, and of the recognized consequences of subacute bacterial infections. This latter approach, done in terms of physiology, pathology, and bacteriology, provides a far wider application to other disease conditions than would be possible if one thought solely in terms of isolated facts concerning individual diseases.

To be sure, a physician could not practice with a knowledge restricted to basic science principles. Considerable factual knowledge is indispensable. However, in undergraduate clinical training, this factual information should not be given priority over methods of thought process or over knowledge and application of preclinical material; and it should be taught, not as detached data, but with relevance to larger concepts. In each case presentation, emphasis should be given first to the application of the basic science principles and only secondarily to adding to the student's factual knowledge. Although the wider the student's factual knowledge, the easier it will be for him to recognize disease entities; nevertheless, "facts are to the physician what tools are to the craftsman. They are essential but serve their purpose only when the student learns to use them in sound habits of drawing conclusions. Better fewer facts and more practice in the use of facts!" (2). Furthermore, it becomes increasingly impossible within a 4-year period to expose the student to the total factual knowledge of all the fields of medicine and even more impossible to have him retain this entire body of facts. Rather, stress should be placed upon showing the student that the basic principles may be applied equally well in each of the many specialties and subspecialties of medicine. These fundamental concepts of medical science learned and understood through repeated application will be remembered long after individual facts are forgotten.

CAPACITIES TO BE NURTURED

This attitude in regard to facts is only tenable if the whole character of medical instruction is such that the student's education does not cease following his final professional examination. For this reason, as well as because of the accelerating growth of medical knowledge, it is an essential objective of undergraduate medical education to promote in each student *the ability and the compelling desire to go on learning*. Of all the capacities to which Dr. Gregg's allegory relates, this is the central one. In the face of the many demands upon his time, the harried practitioner finds it extremely difficult to set aside for study sufficient time to satisfy a lively curiosity; yet the furious rate at which medical knowledge is expanding makes it mandatory that physicians keep themselves up to date. Accordingly, the undergraduate program must prepare the young doctor to continue his own self-education. Toward this end students must be encouraged in the process of self-criticism and review. At the end of each day or after caring for each patient, the student should ponder, "What did I learn, what errors did I make which I might avoid on another occasion,

and where were the gaps in my knowledge or in medical knowledge in general?" Through practice in making critical evaluation of reports in the medical literature, the student may be guided to develop a discrimination to be applied equally vigorously to those occurrences in his own experience that provide self-education. A further contribution to the student's ability to learn on his own can be supplied by demonstrating to him the sources available for future reference. How gratifying it is to see a student become infected with enthusiasm for ferreting information out of the library; but how disturbing when, upon leaving a major area of medical study, the undergraduate admits to no acquaintance with even the leading journals of that discipline! It is also important in nurturing the habit of self-learning that the medical pupil be imbued with a modest but sincere faith in himself and in his ability to think things out for himself. Such confidence is best fostered by a graduated curriculum presenting problems of increasing difficulty commensurate with the student's skill and stage of learning. The student's analysis ought to be subjected to impartial and constructive criticism. Above all else, responsibility must be placed squarely upon the student for reaching his own conclusions and then, through reflection on his work in the light of his experience and his teacher's criticisms, for deciding how to improve.

If the first major capacity which medical training ought to inculcate into the student is the will and power for intellectual growth and continued independent learning, the second objective is to *equip him to deal with professional problems*. These two central aims have similar requirements of attainment. Both call for the same comprehension of basic knowledge. Both demand well ordered methods of thought. Both can be taught only through providing reiterated and disciplined experience in examining reality in terms of general ideas: with problem solving this means looking at the concrete facts of the medical case and seeking how to deal with these facts by considering the case in the light of general medical principles; with the promotion of learning, this may be accomplished by looking back at each such intellectual struggle and seeking to augment one's understanding of the medical principles and the methods of thought that have been applied. To fulfil the general objective of equipping the student to deal effectively with medical problems, five subordinate capabilities should be promoted: the student must be encouraged in his ability (*a*) to accumulate data, (*b*) to recognize issues, (*c*) to analyze the data in reference to the issues, (*d*) to integrate knowledge from relevant areas of medicine and human understanding so as to bring them to bear upon the specific problems, and (*e*) to use language adroitly in order to clarify his own thought and to communicate it lucidly to others.

1. Skill in solving medical problems begins with the *ability to accumulate data*. The student must become accomplished in obtaining such information concerning his patient and the manifestations of the patient's illness as is necessary for the recognition and resolution of medical problems. Emphasis accordingly should be placed upon eliciting an accurate and adequate history, upon the performance of a comprehensive and reliable physical examination, and upon the discriminate use of laboratory aids. Proficiency in collecting and evaluating medical data may be furthered by undergraduate research projects as well as by stressing the reading of original papers in preference to textbooks.

2. Since problem analysis is of little value and sound learning from experience is impossible if the proper issues are not being considered, it is imperative that the student be provided with *disciplines and well-rounded experience in problem recognition*. To accept the chief complaint as the major problem is often to overlook more fundamental considerations. By repeated, supervised experience the student must be guided to develop skill in perceiving, precisely and concisely, the underlying issues. Thus, in an obvious case of rheumatic fever, the problem may not be to determine the presence

or absence of rheumatic fever but rather to decide if there is or is not carditis as well. And, in an outpatient clinic a student may require stimulation by a teacher in order to bring him to recognize that an understanding of the hostility, inconsistency, or disinterest of a certain patient can be of prime importance in the therapy of a more overt complaint such as headache. Practice in problem recognition should not be provided solely in the clinical years but can be supplied equally well by preclinical and research projects that are thought-provoking and that pique the curiosity of a stimulated mind. As an example, one may reflect that a keen alertness and an ability to perceive problems were essential to Fleming's discovering penicillin as the cause of the bacterial inhibition on his culture plates. In developing the student's skill in unraveling complex problems, it may be constructive to help him see that the main problem can often be subdivided into several smaller issues.

3. Once the particulars of a medical problem have been elicited and the issues discerned, critical analysis of the medical data must be accomplished. Accordingly, in medical education particular emphasis must be placed upon providing ***disciplined experience in problem analysis and resolution.*** In relation to most clinical diagnostic problems, this means the student must learn first to localize disease processes anatomically or physiologically and then, second, to seek an etiology. This approach, however, requires the application of methods of logical thinking originally learned prior to entering medical school. The medical teacher, therefore, must insist that his pupil learn first to appraise the facts he has accumulated relative to the problem, accepting only those which are pertinent and sound; next to organize these facts in a valid and logical sequence, and then to apply his knowledge of preclinical science to form a balanced judgment concerning the problem at hand. Just as the history teacher, in posing a question concerning an issue involving colonial Williamsburg, must discipline his students to answer the question in terms of what was happening throughout the world at that time rather than merely in relation to events occurring in Virginia, so too the instructor of medicine, be he clinical or preclinical, must train his students to analyze their problems from many widely disparate aspects. In one instance these may include the organic, the psychological, or the sociological; while in another, reflection may be required concerning the effects upon other organ systems than just the major one involved. The breadth and depth with which the student can analyze a case will, of course, expand with each year of experience. Eventually the student must be encouraged to become facile in handling problems that embrace groups of individuals as well as those involving only isolated cases and he must become adept in generalizing from single instances; for, in increasing measure, the physician of today is becoming concerned with policy making as well as with caring for individual patients.

4. The *ability to integrate knowledge* and thereby to translate knowledge gained in one area to experience centered in another is vital to sound problem analysis and even to problem recognition. In medicine even more than in less complex fields, knowledge becomes of increasing value the wider the sphere in which the person who possesses it can apply it. Medical students should accordingly be encouraged to reflect on the principles learned in prior courses that might be applicable to problems at hand. Likewise, by aggregating the experience garnered from previous cases, conclusions may be achieved which aid in the resolution of a given problem. For example, in considering the causes for failure of a smallpox vaccination to take, one might borrow from experience with other viruses the information that many viruses are heat-labile, whereas storage in the frozen state does not destroy them; or, knowledge of the efficacy of 30 per cent urea solution in providing improved operative exposure for neurosurgeons might be used in handling a pediatric patient with signs of acute brain swelling. As medical

problems are dealt with by a student and his instructor, the lessons to be learned should be reviewed in such a fashion as to make this information readily available for application to other situations. Thus the presentation of a case of galactosemia would be of restricted import to the student unless he is helped to see how this disease is only one example of an entire class of diseases known as inborn errors of metabolism and how it provides insight into the chemical cycles of carbohydrate metabolism involved in numerous other diseases.

5. The *ability to use written and spoken language* to clarify and to communicate thought is essential to a doctor in every phase of his professional problem solving and learning. This is too obvious to need elaboration; but the importance of making the development of this ability a specific objective of medical education is not so well recognized, even though it is realized that recent high school and college training methods may have increased the need for medical schools to provide their students with practice in communicating. That this is a responsibility of a medical school is denied by some physicians, despite the fact that they readily admit that every physician must be capable of expressing himself clearly and concisely, be it in instructions to patients and nurses or in scientific reports and teachings. The student's premedical education ideally should have prepared him soundly in the arts of writing and speaking, in which case the medical school has only to see that these talents do not deteriorate during the period of professional training. However, should the student arrive at medical school deficient in communicative skill, then it behooves his medical faculty to see that he develops some measure of proficiency. Since it is unlikely that the medical school curriculum can furnish the basic requirements for training in the arts of communication, this training may have to be imparted in an extracurricular fashion. Within the framework of undergraduate medical activities, however, all students should be provided with frequent opportunities for both written and oral communication. No exercise does more to force the student to think precisely and thoroughly and to organize his thoughts into a logical order than does a written report. For full value these reports must receive constructive criticism not only concerning their factual content but also with regard to their thought processes and clarity of expression. Similarly, the student ought to be encouraged to talk to patients and their relatives, with care being taken that lay parlance is used and the medical problems understood. The ability to communicate, therefore, like the other four subordinate medical capabilities we have been discussing, should be learned at an early stage in the student's tuition. The learning and, hence, the guidance of the student relative to these skills should never come to an end; for, although method is remembered when facts have been forgotten, to raise a method from being a routine to being an art requires its constant cultivation as education and experience proceed.

PROFESSIONAL RESPONSIBILITY

In addition to providing the medical student with the capacity for subsequent independent learning and the ability to cope with medical problems, the teacher of the medical undergraduate must cultivate in his student two characteristics of sociologic import, the first of which is an understanding of people. Although the selection of students who possess the attribute of human compassion should be a primary responsibility of the admissions committee, human kindness can be encouraged and greatly developed by the faculty. The teacher should not only guide his pupil to a proper balance of science and humanity but also encourage in the student an understanding of people. The means of encouragment must include conscious effort to insure that spontaneously arising student impulses are never stifled. Many a medical student has become disillusioned in his first 2 years of medical school; for, having arrived at school burning with concepts of charity for his fellow man, he spends 2 years largely in scientific laboratories and

lectures, unable to express his altruistic emotions. By the time he reaches the third year, he and his classmates have become so engrossed in the scientific aspects of their cases that the humanitarian side may be overlooked. Commonly the responsibility for providing the student with insight into human behavior has been delegated—if not by official ruling at least by common practice of individual faculty members—to the department of psychiatry, to be taught as an isolated subject. To be sure, a background of basic psychiatric principles provided by psychiatrists is quite in order; but the objective of encouraging in the students *an understanding of, and consideration for, people* must not be left here. Each and every faculty member should share in the attainment of this objective, both through personal example in dealing with patients and students and by including in the daily curriculum discussion of such qualities. As a further means of encouraging human kindness, each student should be helped to obtain an understanding of himself and of his reactions to others.

Recognizing that all men of professional status, regardless of their discipline, ought to be concerned about the course of democracy and about their own social and civic responsibilities, as a final objective of undergraduate medical education a faculty should seek to instill into every student *a compelling understanding of the ethical, moral, and social responsibilities implicit in assuming professional standing.* Preparing men to enter a profession should include education for group effort and community living. It should further stress the application to social and economic problems of those capacities of alert problem recognition, of logical thought process, and of critical analysis which have been outlined earlier. The physician should not lead his life in a medical vacuum; but, rather, he should be encouraged to help grapple with the problems facing his community by contributing his energy, skill, and wisdom. As with consideration for people, so too the qualities of ethical and moral behavior become inherent in the student not as a result of attending didactic lectures but rather through emulation of peers and through participation in active discussion concerning these qualities.

It may be argued by some that medical education should teach something of the economic and practical aspects of medical practice. Although such teaching would in large measure represent technical training, it might be justified in the undergraduate medical curriculum to the extent that it provides principles of medical practice that will enable the doctor to care for his patients better and to meet his moral and civic responsibilities. However, when dealing with the facets of the economic and practical aspects of practice, it is well to remember that, because of the changing demands of modern medical practice, it is impossible to predict the conditions under which a graduate will practice; nor can one reliably anticipate where he will settle. Accordingly, the more technical phases of the economics of practice must be left—as is true in all professional disciplines—to subsequent phases of education. Whereas in other professions such as business administration, law, and engineering, on-the-job training accomplishes this goal, the physician is most commonly in individual practice and therefore must obtain this practical knowledge either during his graduate training or as best he can from the blows of practical experience. To aid him, local, state, and national medical societies should stand ready; and to them and to residency programs should be left the task of providing more detailed technical training concerning the running of a practice.

To the teacher of a clinical specialty, this outline of objectives may seem impractical. What can make it practical is an understanding of the methods of teaching that are implicit in these objectives. To aid the clinical teacher, an example is perhaps in order. His role should be, primarily, to show how the same principles of basic medical science and the same methods of approach already learned in the earlier years of medical school can be applied in a new setting to meet the problems of a new area of clinical medicine.

In clinical teaching, as in preclinical classes the emphasis should not be so much on the assimilation of facts as such, as upon the application of principles in exploring, analyzing, and evaluating facts and then in learning from having done so. Thus, a pediatrician, in supervising a class discussion around a case of Banti's disease, might first stress the gathering of background information concerning the patient and his disease as obtained by history and physical examination. The students may then be guided in the thought process of localizing the disease. This style of learning can be aided by a review of splenic physiology and pathologic physiology, whereas the search for a causative explanation for the patient's illness may be resolved by a consideration of the various etiologies that might affect the spleen. Practice in integrating material may then be provided as the students organize their final reasoning concerning the patient's disease and management. The students should be assisted in recognizing the loopholes in medical knowledge and in their own knowledge; this exercise in self-criticism should, however, be accomplished in such a fashion as to stimulate within the students a curiosity that will lead them to delve into the library or the laboratory for answers. The exercise ought not be restricted purely to the science of the disease. Throughout the class, the students should be led to reflect with sympathy upon the meaning of such an illness to the patient and his family. The case of Banti's disease thereby becomes a review of splenic pathology and physiology provided within a pediatric setting, but a review which can in turn be applied to other splenic disorders faced in other settings; it further has allowed an opportunity to share in applying one's understanding of and consideration for people.

When so practiced, undergraduate medical education becomes an orderly process. Whereas the over-all objective is to provide the neophyte physician with the intellectual building stones with which he can develop skill in the practice of the art and science of medical care, initial emphasis may be placed upon instilling into the student concepts of the principles of medical science which can serve as a basis for present understanding and for future growth in wisdom and factual knowledge. The medical teaching program must further strive to develop in the student the capacity to apply these concepts to concrete medical problems. Toward this end the student must be nurtured in his skill in accumulating and analyzing data, in recognizing and resolving problems, in integrating his knowledge, and in communicating his ideas. Finally, sight must not be lost of the importance of imparting a sense of human compassion and of the responsibilities inherent in the assumption of professional stature. If our neophytes are to become great physicians, they can only do so through self-reliant and self-guided application of the principles and capacities initially learned in medical school, but brought into full fruit by subsequent independent learning. The objectives of medical education as recorded above should serve as ideals. Although ideals, like the stars, may never be reached, we can use them to chart our course.

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A Course Entitled "The Medical Attitude"

An Orientation in the Foundations of Medical Thought

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Instruction dealing with such questions as what does it mean to be a physician, what is the philosophical relationship between medicine and the other professions, what is the structure of patient-physician relationship, is lacking from nearly all current medical curricula. The purpose of this paper is to present the outline of a course that provides the missing information, i.e., that delineates the theoretical premises of medicine in terms of ontology. The course has been given for the past several years at the University of California School of Medicine to second-year students.[1]

Before the course is described and its significance pointed out, two questions should be answered: what is ontology, and why are courses dealing with an analysis of the theoretical premises of medicine in terms of ontology not generally given?

What is ontology? Ontology is a division of philosophy. It investigates the problem of Being and the categories necessary to describe reality in its manifoldness, e.g., quality, quantity, dynamics, form. With reference to the sciences, ontology is interested in the theoretical premises on which they rest. Ontology explores these premises both in the light of the categories and in the light of the objects which the particular science studies. Ontological analysis asks, is the object "really" described on the basis of the premises of that particular science, or is it simplified, distorted, as it were, for methodological reasons? Ontological analysis of scientific premises asks very pointedly to what extent a part represents the whole. Aristotle (1) calls ontology the first science; Tillich (18) calls it the discipline of radical doubt. What both authors mean is that "ontology precedes every other cognitive approach to reality, for knowing means first recognizing something as being" (17).

Why is a course dealing with an analysis of the theoretical premises of medicine in terms of ontology missing from nearly all modern curricula? The answer is twofold: First, medicine has become so impressed with its own recent tremendous progress that it has forgotten to examine the theoretical limitations of its pursuit. Consider, for example, the absence of any analysis of the concept of death. Nothing on the subject has been published in modern medical literature. Textbooks of physiology do not even

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[1] A course dealing with an ontological analysis of the medical attitude requires the participation of many disciplines, particularly philosophy and theology, for, although the question of the medical attitude originates with the physician, some of the answers transcend the range of his competence. For their cooperation in the instruction, thanks are extended to Dr. Wallace I. Matson, Department of Philosophy, to Dr. Raymond Jaffe and Dr. Robert H. Hurlbutt, formerly of the Department of Philosophy (all of the University of California at Berkeley), to Dr. Edward Hobbs, Professor of New Testament Theology of the Church Divinity School of the Pacific, Berkeley, and to the others who gave single lectures.

list the word death in their indexes. Statistics on mortality reflect medicine's ever-increasing conquest of disease as a cause of death, but authors do not raise the question of death's inevitability. Clinical medicine frequently abandons common sense in treating the dying patient (3, 12). Second, medicine has ignored the changes that have taken place in the field of ontology. It is true that the old ontology was metaphysical, in the ordinary sense of the term, and impervious to empirical inquiry; thus, it was unable to help medicine understand itself. However, since Kant awoke from his "dogmatic slumber" and Kierkegaard voiced his "radical skepticism" (14, 21), ontology has been deeply concerned with experience. Tillich (16) and Hartmann (13) describe particularly well the manner in which ontological assertions are open to empirical proof.

What is the value of analyzing the theoretical premises of medicine in terms of ontology? As mentioned before, ontological analysis means "radical doubt." Therefore, this type of exploration obviates the danger of dogmatism, since uncritical acceptance of premises fosters dogmatism, which in turn breeds the two attitudes with which the medical profession finds itself confronted today: discontent from without and disquietude from within. Witness the unfavorable publicity the profession receives, despite all the recent enormous advances in diagnosis and therapy and the numerous proposals to improve the medical curricula, the very diversity of which indicates that no method of choice has been found. Thus, by its radical skepticism, ontological analysis of medicine's premises will help the profession to regain its standing and surmount the current stage of stop-gap improvements in medical education.

However, there are other, much more immediate benefits which an analysis of this type offers from the educational point of view. (*a*) A course systematically delineating what it means to be a physician supplies standards of reference for the evaluation of the medicine of any given time or place and for the physician's appraisal of himself, which should prove valid throughout his entire medical career. Recognition of these enduring standards is all the more important, since progress in the experimental sciences is so rapid at present that the experimental standards of today will be found obsolete tomorrow.

b) Such a course fosters in medical students a clear recognition of the relationship of the various subjects of the curriculum to medicine and to the training as a whole, thus aiding students in the integration of their undergraduate training.

c) In addition, the course, first, aids medical students in understanding their general cultural environment, and vice versa, and, second, enables students of the ancillary medical sciences to gain insight into the core of medical thought more rapidly than is possible with the current method of chance association with more-or-less informed physicians.

In summary, an analysis of the theoretical premises of medicine in terms of ontology provides a deeper and wider insight into what it means to be a physician than can be obtained in any other way.

What should be the plan of such a course? There are several ways to present the subject matter, depending, for instance, on the year of medical training in which the instruction is given. Our course is offered during the second year, just as the student's training in physical diagnosis and history-taking forces him for the first time to view his fellow human beings as patients. After a methodological introduction, the course is divided into two parts: (*a*) the concepts of health and disease in human beings, and (*b*) the concept of their care.

To illustrate the range of the inquiry, Section I of the main part of the course begins by exploring the relation of health to disease. It delineates the now obvious concept that disease is not an exterior force occupying an organism but a dis-ease, a state of diminished health in that organism. It follows that the understanding of disease rests upon an understanding of health. The course then investigates the relation between human health, the health of animals, and the state ot optimal function of

machines, scrutinizing the standards of reference serving each of these classes of beings. To take an extreme example, is the challenge the dying patient presents to the physician basically the same as the challenge the dying animal presents to the veterinarian or the total and apparently final breakdown of an automobile to a car mechanic? Patient, animal, machine; person, organism, thing—is the use of these terms nothing but a kind of shorthand phraseology, implying a merely quantitative difference in the intricacy of organization of their objects? Or do these different terms point instead to a qualitative difference in the tasks faced by the physician, veterinarian, and mechanic? Are not the connotations of the term death, or end, quite different when applied to reflecting living beings, to unreflecting but living physical beings, and to physical objects? Can one reasonably doubt that an explicit insight into their connotations will make any physician a better physician (12, 16)?

To examine the problem from another facet, the sociological, how do physicians, judges, and theologians differ in their standards of reference? All are concerned with man in the state of his inadequacy: man as sick, man as criminal, man in his anguish. To what standard do physicians and judges refer in differentiating the antisocial act of the insane person from that of the criminal, or physicians and theologians in distinguishing between the pathological and healthy anxieties of man (10, 19)?

No comment is needed concerning the analysis of the relationship between economics and medicine and public health and medicine. The topics occupy a central position in current medical discussion. It may be mentioned that in this course the various opinions held today are presented by physicians exclusively; thus the discussion is facilitated by a common point of departure.

The course next analyzes the concept of norm or standardization. An example may illustrate the significance of such analysis. As mentioned in the beginning, health and disease denote states of organisms. To comprehend the endless variety of the living world, standardization is required. In clinical medicine the unit for standardizing various similar observations is the *classical type;* in physics and chemistry the norm is the *mean.* Students are taught that the mean expresses a frequency value, but they learn only by chance that the classical description of a disease is an ideal norm which refers only to a very rare actual occurrence. Yet it is the recognition of these two kinds of norm and the understanding of their difference that will prevent students from merely checking off signs and diagnosing names rather than searching for individual processes and gaining insight into their development (4, 5, 7, 8, 15).

A short historical survey concludes Section I, in order to point out that the problems presented are perennial.

The second half of the course brings into focus the axiom of care. It first explores the general relationship of care to cognition, i.e., the problem of participation and engagement vs. impartiality and detachment, as exemplified by the practicing and the research physician. It then analyzes the question of care as it concerns the practitioner, the central figure of the entire profession. The individual physician-patient relationship is viewed in the light of the three stages of von Gebsattel, which mirror the anthropologic, the physical, and the theological approaches (12, 20) outlined in Section I. The necessity for applying the various approaches is recognized in the commonplace dictum that both the patient and the disease must be treated. The interrelationship of these approaches, however, is not so clearly seen. To illustrate the importance of this problem: how does the physician-patient relationship start? Does it start with the person-to-thing relationship, like a technician trying to repair a machine, or with the person-to-person relationship, one individual being asked by another for help? In other words, must the two attitudes follow a certain chronological pattern in order to provide optimal care, and is the attitude of the "basic" sciences perhaps not "basic" for medicine but secondary (12)? To raise another question about the relationship of the various approaches, what determines the lim-

its of medical intervention—the impersonal technical status of the medicine of a given time and place or the acceptance of certain spiritual values? Reference is made to the ethical problems of medicine, and in particular the dilemmas presented by euthanasia, artificial abortion, artificial insemination from a donor, and cosmetic surgery for reasons of fashion (11).

Finally, the presentation of the concept of the clinical entity, or single disease, may be mentioned in this delineation of the physician-patient relationship in medical practice. "Physicians cannot live, act, or speak without it," as Knud Faber expresses it (6); indeed, all textbooks of medicine are based on it. However, no current textbook of medicine describes the clinical entity as such. It is as if a textbook of physics or chemistry appeared without a chapter on the atom or a textbook of histology without a section on the cell. As has been pointed out, the tendency of students to consider maximal examination of a patient identical with optimal examination can be traced to this deficiency (7).

The course ends with a discussion of the patient-physician relationship in medical research, i.e., the performance of those experiments on human beings which are of no immediate value to the patient but are made to confirm or disprove some doubtful or suggested biological generalization (2, 9).

The outline of the course follows:

THE MEDICAL ATTITUDE

An Orientation Course in the Foundations of Medical Thought

Part One: Introduction

I. *Purpose and Significance of the Course*
   - A. Delineation and elucidation of the nature and structure of medicine from the physician's standpoint
   - B. Development of ultimate standards of reference for the appraisal of medicine and of the physician himself

II. *Reflections on Ultimate Standards of Reference*
   - A. The limitation of the approach of the sciences
     Their unquestioning acceptance of their axioms
   - B. The radical doubt of ontology, the discipline that questions these axioms; the problem of ontological verification

Part Two: The Basic Definition of Medicine: Concern with the health of fellow human beings

I. *Human Health and the Physician*
   - A. Health and disease as forms of freedom of action
   - B. Medicine contrasted with other disciplines
     1. *Physics and Medicine*
        Man as a physical being: the physician as a repair mechanic
     2. *Biology and Medicine*
        Man as a *living* physical being: the physician as a veterinarian
     3. *Philosophical Anthropology and Medicine*
        Man as a *reflective* living being: the physician as a fellow human being
     4. *Theology and Medicine*
        a. The finite freedom of man: limitations of the physician's power
        b. The difference between pathologic and nonpathologic anxieties: the different roles of physician and clergyman
     5. *Economics and Medicine*
        The relation between optimal medical care and the defrayal of its costs
     6. *Public Health and Medicine*
        Society's obligation and coercive right: the role of the public health officer
     7. *Jurisprudence and Medicine*
        Criminal and insane antisocial acts: the different attitudes of law and medicine
   - C. Man as a particular individual
     1. *The problem of norm*
        a. Uniqueness and standardization
        b. Immanent (personal) norm
        c. Transcendent (general) norm
           Frequency norm (average)
           Ideal norm (classical type)
        d. The variety of disease and health: diseases and constitutional types
   - D. Historical and Cultural Considerations

Historical and geographic differences with respect to medicine and the medical profession: the development of the contemporary situation

II. *Care of Human Beings, and the Physician*
- A. The Concept of "Care" in General
  1. "Detached" man and "engaged" man
  2. The various modes of being "engaged"
  3. The categories: care in general, and care of health
- B. Nature and Structure of Patient-Physician Relationship
  1. In practice
     a. The three stages of von Gebsattel
        1) Compassion: the basic subjective stage
           Alert listening (history taking)
        2) Estrangement: the objective scientific stage
           General nosography
           The concept of the single disease
           Its model: the classical type, not the average
           Its purpose: prognosis
           Its components:
           environmental
           anthropologic-constitutional
           topographic
           pathologic
           functional
        3) Personal communication: the final subjective stage
           "Ethics of medical care"
           Individual care and man's inalienable moral tension
     b. Principles of therapeutics
        1) The physico-chemical approach: chemotherapy, surgery
        2) The biological approach: reinforcement of defense mechanisms
        3) The personal approach: psychotherapy
  2. In research
     Experimentation on human beings

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Humanities and Premedical Education*

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I do not intend to be practical and to prescribe a balanced premedical education, but rather to suggest what I think a liberal education, and especially an education in the humanities, should be. My point of departure will be a conversation early in the summer with a mathematics colleague on the place of mathematics in a curriculum. He held strongly that the study of mathematics was not as a tool for the natural sciences. In that case, I said, "It is like history—useless." His indignant disclaimer led to my explanation that I meant that mathematics and history were then to be studied for their own sake, as modes of thought and understanding; that history was no more a tool for the social sciences than mathematics for the natural sciences. They are to be taught as in themselves consummatory and not instrumental. These alternatives are, of course, not exclusive. The study of mathematics or of history for its own sake may well be necessary for its long-run effectiveness as a tool. To this I shall recur.

This point of view has a bearing on the answers to questions which we have been asking at this conference. What are we in premedical programs and in medical schools preparing students to be: physicians, scientists, professional men, members of society, or, in addition, individuals who must live with themselves? Are these roles distinct, or does each imply the others? How do we prepare? By training, or by education? Do we encourage manual and mental skills alone, or intelligence that sees beyond and behind them as well? The basic science courses might well be examined in this regard.

I would approach related questions similarly. Should there be a special premedical program with special courses or sections, including a general (or liberal) education, designed for premedical students and justified as ancillary to the practice of medicine? A report of the Institute of Higher Education of Columbia University entitled: "Liberal Arts as Viewed by Faculty Members in Professional Schools" gives clear evidence of the instrumental purposes attributed to the liberal arts by these faculties.[1] As we might expect, English composition achieved 96 per cent of the votes, with mathematics, history, and speech following in that order. Psychology was also high, while literature rated only 44 per cent, and art and music had 12–13 per cent. Everyone believed in liberal arts education, but each wanted those subjects useful to his profession. For medicine, we know the stress put on English and elementary foreign languages; not only are these treated as tools, but we may wonder whether the way they may be taught for this purpose justifies their citation as evidence of the inclusion of humanities in premedical education. Fortunately, they can be more than tools. Written and spoken English is not only a mode of exposition and persuasion in the professions, in citizenship, and in public activities of all sorts but is the means of shaping our own thoughts and feelings by the very experience, or experiment, of expressing them. So taught, English composition can be general and liberal, not pre-vocational, just as can the basic sciences.

What do we want the doctor and man to be like? Lists of qualities and capacities, or at least the words used in such lists, may

* University of Washington School of Medicine Faculty Conference, 1959.

[1] Cited in the *New York Times* of August 16, 1959.

vary as each of us sums up the items desired; but are we really far apart in essential aims? In any case, I shall try a list: the ability to reason critically and to reach sound, i.e., testable judgments on one's own; knowledge enough to be able to start thinking in various areas of experience and types of situation and to know what should be known as grounds for judgment; curiosity and imagination, to project one's thought into the unfamiliar, to discover the new; sensitivity and sensibility, the sort of feeling that supports the imagination in understanding people and situations and in aesthetic appreciation; social attitudes and criteria of decision and of behavior based on a *considered* non-egoistic value-structure.

The last item has recently been the object of much concern. Attention has been drawn to it by the conflicting emotions aroused by the phrase "socialized medicine" and more generally by anxieties such as those expressed by Philip E. Jacob in his study of *Changing Values in Colleges* (1957). These have been increased by the results of the Stouffer role-conflict questionnaire on friendship and honesty given to Harvard students. Two questions of importance for premedical students but not given solely or primarily to them dealt with a hypothetical medical examination of a close friend for insurance.[2] The crucial point was whether to shade doubts in favor of the friend; 51 per cent would do so! Similar questions were asked about similar problems for other occupations, including academic decisions as to examinations, grades, and the like. The evidence that from 26 to 70 per cent of the students answering (the percentage varied with the specific problem) would shade the truth for loyalty to a friend indicates uncertainty in Harvard and probably in American society about which of these virtues should prevail.

[2] Cited in Allen H. Barton, "Studying the Effects of College Education, a Methodological Examination of *Changing Values in College*," p. 91, 1959. The problem is described as follows: "You are a doctor for an insurance company. You examine a close friend who needs more insurance. You find that he is in pretty good shape, but you are doubtful on one or two minor points which are difficult to diagnose." The questions are: "What right does your friend have to expect you to shade the doubts in his favor?" "Would you shade the doubts in his favor in view of your obligations to the insurance company and your obligation to your friend?"

Returning to the full list of qualities and capacities, we may now ask: Can these be taught? I assume that we rule out indoctrination by rote and precept and on authority, and also conformity induced by the proper incentives or by other methods of conditioning. These seem to be ruled out not only by the key words in my list of traits—critically, on one's own, curiosity, imagination, sensibility, considered value-structure—but by the reaction (we hope) to indoctrination and conditioned conformity on the part at least of those minds that already have the potential of critical independence and sensitive imagination.

This conclusion suggests that the possibilities of teaching these traits are determined by the types of mind and character selected for admission to college on the way to medical school. Is there a flexible, open type that is educable in contrast to a rigid, stereopathic type that is merely trainable? The distinction, I hope, is not absolute, but is a matter of degree or emphasis. Many, perhaps most, students may have potentially enough flexibility that something can be done for them *if* the flexible personality can be taught. But can it? Can such intangibles as critical judgment, curiosity, sensibility, value-structure, be taught? This is an ancient question. In the form, can virtue be taught? it is as old as Plato. Jacob's report was discouraging, but Barton has questioned the reliability of his data. The question, however, is not what *is* being done but what *can* be done. Jacob himself obviously thinks something *should* be done. Indeed, our business as teachers rests on the assumption that teaching has results. We are not, or should not be, teaching virtue, taste, or conformity to particular standards, but the capacity to think, to feel, and to judge about truth, virtue, and taste. We may look to authority, but even authorities should be chosen on examinable grounds. The responsibility for choice is with each person. To

this extent, at least, I go along with Sartre in his existentialist view of the individual and inescapable requirement of choice. The aim, in fact, is not the transfer of capacities and values by teaching, but their development through learning. The student has to learn *how*, through practice by his own active participation in being educated; hence, my earlier comment on how we may teach a premedical science. Is it just for memorizing accepted conclusions or for stimulating curiosity and sharpening judgment? The same holds for a social science. They *may* be liberal disciplines.

However, my concern is to be with humanities. Why need education go beyond the sciences? The humanities usually are held to be the arts, notably literature, plus history and philosophy. To find common elements that clearly and distinctly characterize them all is difficult. I have tried to do so elsewhere. Their stuff is the human condition, but so is that of some other fields. If we neglect philosophy for the moment, history and art offer us concrete examples of action, thought, feeling, particulars of human experience interpreted by the artists or the historian and needing in turn the interpretation of the student. Here is a dimension of experience that is vicarious and may extend and enrich and refine the individual's immediate personal experience. Here is a chance for participation and discovery for one's self—the eliciting of meaning through analysis, imagination, judgment. The meaning requires interpretation of man and nature, past and present, and is relevant to the interpretation of one's own situation and to one's own choices. It is dependent on what each of us can bring from previous experience to the evidence presented by art and history, and it enables us to take away more than we brought.

The "reading," as we may call it actually and metaphorically, is personal but not private; it is answerable to a public. In a college, this means to the discussion group and to the teacher as a fellow discoverer. It is subject to critical examination and competing views and responsible not only to the document itself and to the other evidence, but to scholarly tradition. It must be explained and defended. Whim, fantasy, prejudice may be exposed. The conclusions are submitted to such verification as is possible, but this does not mean to arbitrary authority. Authority itself must be able to face critical examination. Often the student or group of students may introduce a novel idea, at least a novel, even a challenging, way of putting a problem. In any case, it is new to them—a discovery, not the repetition of something that is true simply because it has been said before. To the excitement thereby contributed to teaching, I can testify.

It would be well to give instances, such as the Peloponnesian War, a particular historical event and situation, especially as told by Thucydides, for its significance as a power struggle. The use of specific modern parallels is unnecessary—indeed, undesirable. The nature and effects of power in relations between and within states are starkly portrayed, notably in the debates which Thucydides reports and invents. Or we might take a modern novel, Malraux's *Man's Fate* (more aptly titled in the original, *La Condition humaine*), dealing with the behavior of different types, situations, and values in the grim tragedy of Shanghai, caught between Chinese nationalists and communists and foreign interests. Sometimes this book is taken as a communist tract. We do not have to dig very deep to discover how little this description fits, and how much more is there. Again, a philosophic work may be examined as an object in intellectual history, such as John Locke's *Essay concerning Human Understanding*, a systematically unsystematic treatise, unsystematic in that Locke was open-minded enough to see the difficulties in his system as he expounds it, so that we can follow the critical development of his thought. This trait still contributes to the fruitfulness of his work for study. Or the interpretation may be of the imagery and emotional tension of a Donne religious sonnet, the paradoxes of the figures of speech and of the

emotions and of the relations of figures to emotions.

So too, in a somewhat different way, we may interpret a building, a painting, a piece of music. These may not offer the grounds for the same morally and intellectually serious interpretation as the works already referred to, in which we may easily forget that we are dealing with objects that have something more than moral or intellectual content. The humanistic concern is not just with this content, but with the artistic form and the satisfaction it gives to the eye and ear and to the mind, the aesthetic dimension. I do not intend to get into the theory of form and content, though I am likely to suggest where I stand in that controversy. The art not only serves as the means of effective presentation, making possible the creative expression by the artist and the imaginative reception by the reader or spectator of ideas and feelings; but, in that very role, it is integrally joined to these and shapes them while being shaped by them. Hence, I did not mean above that art was not to be taken seriously. On the contrary, it is not to be treated as instrumental but as consummatory in experience, and so to be enjoyed in the very act of understanding what is said.

Such an act of understanding or interpretation is hence not simply an exercise or a trial run preliminary to the serious adult business of interpreting life and enjoying life as men and women. Life is not something the actual experience of which is always postponed by the preparation for it so that we exist only instrumentally for an ever receding end. We as students are already involved, already living, already making choices and commitments, whether we know it or not. We are shaping and testing our thinking and feeling, our attitudes and tastes, our judgment, and are engaged in consummatory use of art and history, which we hope, whether or not we ever engage in creative activity as painters, poets, dramatists or historians, will be lifelong.

This is an involvement of mind and emotion that is actual and yet, at a distance, historical and aesthetic. It is an imaginative identification, better described than it can be by me by T. S. Eliot in "The Dry Salvages" of the *Four Quartets:*

> . . . I have said before
> That the past experience revived in the meaning
> Is not the experience of one life only
> But of many generations . . .
> . . . . . .
> Now, we come to discover that the moments of agony
> . . . . . .
> . . . are likewise permanent
> With such permanence as time has. We appreciate this better
> In the agony of others, nearly experienced,
> Involving ourselves, than in our own.
> For our own past is covered by the currents of action,
> But the torment of others remains an experience
> Unqualified, unworn by subsequent attrition.
> People change, and smile: but the agony abides.
> Time the destroyer is time the preserver.

In this involvement is discovery or self-discovery. Reed's Senior Symposium often opens with a discussion of *The Death of a Salesman*. This may not be a great play (time will give us a better perspective on its place), but it serves well for interpretation. Of several possible ways of analysis whereby the interpreter may discover its meaning for himself, I mention two. First, how did Willy Loman and his family get that way? This question calls for social, psychological, historical analysis, seeking the causes of states of mind and behavior in the interaction of men and circumstances. Second, what did Willy Loman and his wife and boys want? What choices had they made and why? This is not the causal why but the purposive why, the ends they sought. What did they value and on what criteria did the valuations rest? What conflicts of values resulted within them and between them? We are thus exploring and critically examining values and, whether we want to or not, our own values. We are engaged in ethical inquiry. The two objects of inquiry, which may be summarized as: "How did Willy get there?" and "Who and what was Willy?" involve the

questions: "How did I get here?" and "Who and what am I?" This is self-discovery, more or less consciously critical. Note that the decision made in accepting both the first and the second sets of questions as proper inquiries or in denying the significance of the second by subsuming it under the first, with the implication of determinism or relativism, is a choice that depends upon our view of the nature of man and our criteria of values. Thus, humanistic study is concerned with the general as well as the particular, and here is where the rational critique called philosophy (not simply as an aspect of intellectual history) can be allied with the other humanities, especially in the divisions known as ethics and aesthetics, which are most directly connected with what I have been saying.

And so I am back where I started. The humanities and all other disciplines of mind and emotion are not just tools but ends in themselves, if man is man as well as craftsman.

"The New Pediatrics" and Medical Education*

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There can be little doubt that the majority of practicing physicians of today are being asked to serve children and their parents in a very different manner than they were prior to the advent of modern diagnostic, preventive, and therapeutic procedures. As early as 1949, when the American Academy of Pediatrics published the results of its nationwide survey of child health services and pediatric education, it was clear that pediatricians' time was no longer being occupied chiefly with the care of children with acute and serious medical and surgical illnesses (1). On the contrary, many were already expending half or more of their energies working with basically well children whose parents were seeking advice about the avoidance of disease and the promotion of optimum development, and only a small fraction rendering consultant opinions on problems of the type that they had been best fitted to solve by their formal medical training. More recent articles indicate that this tendency has been sustained and, if anything, intensified in subsequent years (2, 6–13, 15–23, 25–27).

Since some of the problems which used to occupy the pediatricians have waned, others such as the behavior disturbances of infancy, childhood, and adolescence, genetic counseling, adoption, rehabilitation of children with permanent physical and functional handicaps, and accident prevention have come to the fore. Though these shifts in emphasis have been taking place in practice, the pediatric departments of many medical schools and affiliated teaching hospitals have continued to devote most of their energies to the more tangible somatic aspects of medicine. This is reflected in the subject material submitted for presentation before the Society for Pediatric Research and the American Pediatric Society by those working in academic departments. Thus, of the 361 titles listed in the programs of these societies in the Spring of 1960, about 27 per cent dealt with metabolism, 22 per cent with immunology, bacteriology, and virology, 10 per cent with congenital malformations, 9 per cent with hematology, 8 per cent with endocrinology, 5 per cent with neurology, and 13 per cent with other miscellaneous aspects of body function and disease. Only 5 per cent were concerned with growth and development and but 1 per cent with behavior and habilitation (4, 24). In line with this, many medical students and house officers feel that though they are receiving excellent training in the somatic aspects of medicine, they are being inadequately prepared to deal with the environmental, social, and emotional problems which make up so large a portion of contemporary pediatric practice (8, 9, 22, 25).

This deficiency in medical education was recognized and given considerable attention in a report issued jointly by the Committees of the American Association of Medical Colleges and the Association of Medical Social Workers 12 years ago (3). Thus, this is no new problem, and the question arises, why has so little progress been made in the past dozen years?

Apart from the inertia and resistance to change which characterize most institutions as large and heterogeneous as the medical faculties of this country, there appear to be other more cogent factors which are impeding progress in the investigation and teach-

* The points of view expressed here are based in part on studies supported by the Commonwealth Fund of New York.

ing of pediatrics as it is defined by the calls on today's practitioner. One stems from the fact that, because they fall within the scope of his own life experiences, almost everyone tends to consider himself somewhat of an expert in matters of social relations and human behavior. Hence, he may find it difficult to accept the thought that "common sense," while common enough, may be no more sensible than was yesteryear's prescription of arsenic or blood letting. The fact that one is dealing here with intangibles which cannot as yet be measured and manipulated as easily as the more substantive variables of chemistry and physics adds to the difficulty. Time has been another handicapping factor, since many of the interview, observational, and other techniques developed for gathering information require more hours than those engaged either in the teaching or the practice of pediatrics have available. This has resulted in a tendency to refer problems falling in this area to psychiatrists. Unfortunately, however, they too are pressed for time, since they can treat only a very limited number of patients per year and have many more asking for help than they can take care of.

If this problem is to be solved satisfactorily, it appears essential that, while the older forms of investigation and therapy are continued, new avenues of approach also must be explored. For instance, it has been shown that one can make comparative studies of the effects of various forms of medical and surgical therapy upon the lives of patients with enduring physical handicaps (5, 14). Such information is needed if the investigation, teaching, and practice of "comprehensive medicine" is to include considerations of the balance between that which is good for a disease and that which is best for the person who has it.

Likewise, it has been suggested that the principles of nutrition and bodily homeostasis may be applicable to the field of social nutrition and emotional homeostasis (27, 29). In the metabolic area, it is known, for example, that disturbances such as dehydration and water intoxication develop when the intake of water falls below physiologic floor or above physiologic ceiling levels (28). So, too, current explorations are indicating that it may be possible by simple, clinically practicable means to define in statistically valid terms the minimum maintenance needs and maximum tolerances of healthy and sick individuals for affection, discipline, approval, and other essential social nutrients. Indeed, preliminary data, obtained on over 700 well and sick children by means of a simple questionnaire booklet, indicate that disturbances such as temper tantrums, school failure, stealing, bed wetting, obesity, hypocaloric dwarfism, to mention a few of the problems commonly encountered by physicians caring for children, may be due in many instances to easily recognizable forms of social malnutrition (30). Thus, there is reason to believe that these aspects of comprehensive patient care can be subjected to some of the same types of study and exploration that have become routine in dealing with substantive variables. Indeed, it is tempting to go further and suggest that this may turn out to be an area abounding with opportunities and one from which pediatric teacher-investigators and practitioners alike may derive much satisfaction.

It should not be difficult to incorporate information resulting from this type of work into the curricula of teaching services, for it merely constitutes one aspect of the total attention which almost every patient needs. The challenge of the moment, therefore, is to forge the methods, gather the knowledge, and develop the skills which are an essential prerequisite to effective teaching. This will require not only funds and facilities, but above all decision by those in charge of the affairs of medical schools that this is a subject deserving of the same relentless search for basic principles, the same controlled study of key variables and systematic exploration of diagnostic and therapeutic procedures, and the same unprejudiced, critical appraisal of results that have been found productive of progress elsewhere in the field of medicine.

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Television in the Teaching of Psychiatry

Report of Four Years' Preliminary Development*

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In psychiatry, as in all the behavioral sciences, there is a 60-year antecedent history of the use of motion pictures for research, documentation, professional teaching, and lay education (15, 16). The newcomer television is another of the motion media, different in kind, but overlapping conspicuously in many functions. Its brief 20-year history suggests a very potent interrelationship with all media heretofore employed by medicine for its broad purposes. Psychiatry has already been one of its principal beneficiaries and is becoming increasingly so.

Many dramatic and educational broadcasts of the open airwaves have concerned serious psychological subjects, both fictional and real. University educational television has found that psychology and other courses of behavioral content (marriage, sociology, child growth, foundations of human behavior) provide admirable subjects for on-campus televised classes and for broadcast telecourses (4, 5, 7). The *American Psychologist* reviewed early progress in these experiments in its special television issue of October, 1955 (1). Because of their proved effectiveness such courses have been steadily expanding in the intervening years (7).

For physicians in practice Smith, Kline & French Laboratories have pioneered in the television presentation of professional materials at medical conventions over a 10-year span (12). Their programs have included psychiatric interviews, electrotherapy demonstrations, and LSD experimental psychosis. Their closed-circuit "Videclinics" have largely pioneered one pathway toward national postgraduate education of physicians in psychiatry.

Medical centers, with their extensive teaching commitments at all levels of professional and sub-professional education, not to mention the demands of research and medical care, typically have been somewhat slower to seize upon television. Wittson and staff have built television into the new facilities of the University of Nebraska's Psychiatric Institute (29); since 1956 black and white television has been used intermittently for small and large groups of medical students, nurses, and graduate medical groups. Thomas and Brown report ten exploratory experiments in human behavior in their provocative survey of TV potentials for medical research (27). A recent survey of TV in medical centers indicates that psychiatry is a principal point of television activity at a number of medical schools (10). Such interest has been sparked in part by a succession

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of workshop demonstrations in medical television which have pointed clearly to the potentials in the behavioral sciences. The University of Washington, the University of Michigan, Western Reserve University (9), the Pennsylvania Psychiatric Institute (8), Albert Einstein University (2), Wayne State University, and others have all begun to use TV in psychiatry.

At intervals since 1949, in the television efforts at Kansas University Medical Center (20–23), psychiatric materials have been touched upon, but heretofore without curriculum integration. Beginning in 1956 television's possible utility for medical students in psychiatry has been explored at an accelerating pace.

COURSES MEDIATED (IN PART) BY TELEVISION

Introduction to Psychiatry (Dr. Gundle). —This freshman introductory course focuses primarily on the normal variations of human behavior and personality development. It is integrated with the teaching of physiology, biochemistry, and embryology, while anchored to the principle of homeostatic shifts, with their accompanying physiological changes and psychological defenses. The course included three or four television presentations of 1 hour each.

A patient from the outpatient department was interviewed unrehearsed, illustrating the presence of conflict and anxiety, while demonstrating the clinical application of general principles previously presented. A second TV interview attempted to illustrate some of the ego-defense mechanisms. A third television demonstration dealt with unconscious processes and, through the use of hypnosis, released memories and mechanisms not heretofore available to consciousness. The varied behavior of newborn infants televiewed from the nursery illustrated the fact that newborn infants are already complex differentiated human beings. A discussion by the lecturer followed each demonstration.

The use of television has been limited during this first-year course. Since the first-year curriculum focuses on the so-called "normal variations" of human behavior, its motives, vicissitudes, and results, it is undesirable to include more than a minimum of psychopathology. Expansions of the television interview method may develop in 1962 with the transfer of the freshman students to Kansas City from Lawrence. Over the 3 years 1957–60 eleven television demonstrations have been given.

Introductory Courses in Psychopathology (Drs. Laybourne, Forman, and Seeman[1]). — The sophomore course consists of fifteen 2-hour sessions devoted to the dynamics of various symptoms of emotional illness, particularly covering anxiety, the neuroses and defense mechanisms, and some psychotic symptoms. The doctor-patient relationship and interviewing technique have been included as appropriate for this stage of the students' development. All materials have been organized within the framework of what the practitioner is likely to encounter and must know.

Before 1956 many motion pictures were utilized to visualize particular psychopathologies. In 1956–57 three initial television interviews were greeted so enthusiastically by students and faculty that, from 1957 onward, the course has been organized to incorporate TV demonstrations into a large proportion of the sessions. The format of individual sessions usually has consisted of a lecture presentation of the essential material, followed by a television demonstration of an illustrative patient, and concluding with a discussion. During 1959–60 the group seminars of ten to twelve students, which were the third segment of the session in former years, were replaced by a discussion period for the entire class. In 1957–58 twelve of sixteen scheduled psychiatric TV interviews were conducted; several failed to be delivered because of the nonavailability of the proper type of patient at the time of need, or because appropriate patients balked at participation. Thirteen of sixteen scheduled interviews were programmed in 1958–

[1] William Seeman, Ph.D., Clinical Professor of Psychology.

59. In 1959–60, because of a faculty changeover, five of twelve scheduled interviews were televised.

Clinical Demonstrations (Dr. Jacobs).—During the senior year the students are assigned by sections to the Department of Psychiatry for 8 weeks; here they spend 1 full day per week with psychiatric outpatients. By 1960–61 this is to be expanded to 16 weeks. Utilization of television evolved from the needs for making these outpatient experiences more meaningful.

During 1957–58 the students' outpatient periods were supplemented by observation-interviews. A single chosen patient was seen for psychotherapy twice weekly by a psychiatrist throughout a full year. Students observed and listened to the sessions from behind a one-way mirror and afterward discussed the case briefly with the therapist. The physical shortcomings of the observation room were complicated by the slow progress of therapy and by the students' entry by sections into the case progress at long intervals. During 1958–59 televised interviews replaced the one-way mirror, and each week different outpatients were seen who were being diagnosed or processed for intake. The patients were selected almost at random, although an effort was made to include those who had been seen by one of the students present. On conclusion of each session the therapist joined the group to lead a brief discussion. Twenty-nine interviews were conducted in 1958–59. In 1959–60, with reorganization of this curriculum segment, television was temporarily discontinued.

Training in Psychotherapy (Dr. Eaton).—During 1959–60 an exploration was undertaken of the possible role of television for the improved teaching of psychotherapy to residents. A senior resident was assigned a suitable patient for weekly 45-minute interviews. Fellow residents plus a group of staff members gathered in a conference room nearby under the supervision of a senior faculty member. The television screen and speaker allowed intimate contact with both the patient and the resident. Interpretive comments were made by the staff psychiatrists. Following each interview a discussion was conducted concerning content and method. Between interviews brief memoranda by the faculty supervisor raised pertinent issues concerning the psychotherapy.

Fifteen periods of television interviews have occurred to date (April 15, 1960) and are continuing. Tape recordings of the voices have been made occasionally for the convenience of the resident-therapist. No attempt has been made to record the TV image, nor would it be considered fruitful for this particular case.

Miscellaneous.—Among our noncurriculum television efforts have been 2 hours which warrant mention. For 2 years television has been used as a motivational stimulus for freshmen during their week of orientation. In 1958 a psychiatric interview was used as a provocative clinical subject. In 1959 a faculty member consulted with a resident concerning a psychiatric patient, and in so doing exposed the resident's own attitudes, and his available knowledge. By this means the process of learning and maturation in medical education was highlighted.

TECHNICAL TELEVISION CONSIDERATIONS FOR PSYCHIATRY

Television camera chains for use in psychiatry.—It is obvious that color is almost always unnecessary for psychiatry; indeed, it may be obtrusive and troublesome. Furthermore, since broadcast standards are not required, choice of a monochrome system is factored by local needs. In addition, a vidicon-tube camera is recommended as "standard" for this type of intramural closed-circuit television for every fundamental technical and educational reason. Many makes of vidicon cameras are available, and these are being engineered toward smaller size, more automatic function, and lower cost. Our nonbroadcast DAGE 101A camera has a 3-lens turret, is equipped with a high-sensitive vidicon tube, and supplies an acceptable 400-line picture for local distribution.

The setting for television pickup.—The

need for preservation of the privacy of physician and patient during clinical teaching has created the one-way mirror, the circumspect microphone, and now television camera surveillance with concealed viewing port. The sensitivity of any television pickup tube determines the volume of light required. Present vidicon tubes cannot now combat the light losses of a one-way mirror even when excessive light (and heat) is supplied inside the interview room. Therefore, a decoy bookcase was cut through with a clear glass port. Camera and lenses were masked and lens edges blackened. The camera room was darkened to prevent inadvertent glimpsing of the cameramen. Additional overhead fluorescent lights were installed to provide adequate lighting. However, our compromise between acceptable illumination by studio standards and levels unobtrusive to doctor and patient will be solved only with the availability of far more sensitive tubes. A wall-to-wall rug and wall curtains have helped to reduce reverberation. Chairs were placed so that the patient faced the camera almost head-on, while the psychiatrist was seen in profile or in over-the-shoulder position, so that both his personality and presence were minimized. Occasionally both were seated side by side. Simplicity, light colors, and low contrasts were keynotes of the setting.

FIG. 1.—Interview room with psychiatrist and patient. On the opposite wall the one-way mirror is adjacent to a bookcase with a concealed television port. The microphone is concealed on the desk top.

TV cameras in function.—Our camera was handled routinely by a television technician. Before each demonstration the operator arranged the interview room, opened the port, plugged in the camera, microphone, and receivers. During each patient demonstration the camera routine usually consisted of an opening 2-shot introducing patient and psychiatrist. Closeups of the psychiatrist and patient identified their personalities and overt characteristics. Thereafter the camera dwelt upon the patient more or less constantly with closeups and medium shots, returning only to the doctor at intervals for visual variation or for some pertinent action.

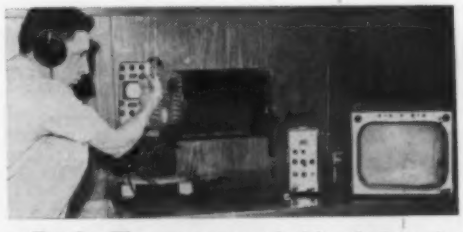

FIG. 2.—The cameraman televising the interview from the adjacent room through the port, with TV monitor and audio-video mixer at the right. At the time of television pickup, the lights are turned off in this room, and the camera is masked in front of the lenses.

Audio pickup.—During psychiatric interviews the pickup and transmission of conversation was usually volumetrically more important than the visuals, although the doctor's and patient's personalities load their words with reality and meaning. Our microphones were concealed on the desk surface or, latterly, incorporated into a telephone. Disproportionate attention was paid to audio limitations during the orientation of new participants to the television interview. Good enunciation, slow pace, and acceptable voice level were vital in our less-than-perfect acoustic situation. Great contrasts such as a crisp-voiced psychiatrist paired with a confused whispering patient were very difficult to control cheaply and simply in this nonstudio setting.

Reception.—It was easiest and cheapest to utilize standard television receivers on 60-inch-high classroom stands. Control of picture quality and audio level at these re-

ceivers was handled by the classroom instructor without guidance. Large images were psychologically important in auditoria, because of subconscious comparisons with motion pictures. In our 900-seat major auditorium we have utilized our Columbia Broadcasting System field-sequential color television projectors during our experimentation with the orthicon camera of the same system.[2] Recently, we have begun use of a General Precision Laboratories black and white projector.[3] When coaxial cables were laid permanently into a small conference room across the hall from the interview room, into our major auditorium, and temporarily into another large classroom, the setup and strike of equipment became minimal. However, until sensible TV utilization

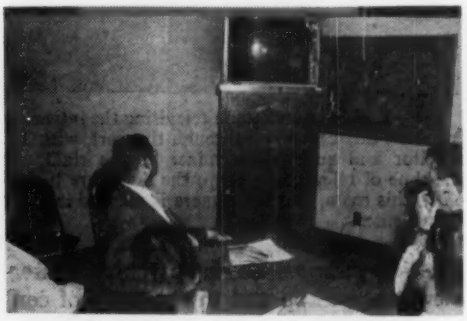

FIG. 3.—A small classroom immediately adjacent to the interview room, served by a 24-inch commercial monochrome receiver, the picture signal delivered by cable. In operation the instructor handles the adjustments of the television set.

has been established in any medical center, only temporary coaxial cables are recommended.

Economics of television for psychiatry.—One can start reasonably with a good one-lens automatic vidicon camera chain with a 17-inch Conrac video monitor at a cost of about $1,500.00. For best all-purpose functions at this time a camera supplied with high-sensitive vidicon, with four-lens[4] remote-controlled turret and control monitor will price at about $3,000.00 complete with carrier equipment. Small all-transistorized new cameras combine easy handling with a broadcast-quality picture, and will cost about $4,500.00 without accessories. A portable studio vidicon two-camera complex will cost about $12,000.00.

[2] Gift of American Cancer Society, Inc. (Vericolor, Remington-Rand).

[3] On Loan, courtesy the Upjohn Company.

[4] Use of Zoomar lens suggested.

DISCUSSION: PSYCHIATRY AND TELEVISION

Television and Other Demonstration Methods

To appraise the TV-mediated interview with proper perspective, it should be compared with other methods of demonstration.

FIG. 4.—A major auditorium with a large-screen television projector, the picture signal delivered by cable from the interview room. During television illustrations an instructor-interlocutor guides the televiewing, handling the voice volume in particular.

It is possible to demonstrate a psychiatric syndrome to a large group of students in an amphitheatre or auditorium. Deft handling of patients by an able clinician can make such a presentation meaningful. However, the eyes, ears, and interest of the students are defeated in direct proportion to their distance from teacher and patient. Moreover, most psychiatric patients cannot be handled in this grandstand fashion at all, and only the most superficial pathology can be revealed. As a result, patients usually can be shown to a small group of students at most, but still without privacy.

Another widely used method is that of interviewing patients before a one-way mirror with a small group of students who see and hear everything from an adjacent room. This approach permits students to participate visually and verbally, and the proximity fosters a better appreciation of the per-

sonal factors in the observed interaction. Yet even moderate-sized groups can scarcely be accommodated by this method. Usually the students cannot talk freely without being heard by the patient; and physical factors of darkness and poor ventilation are too often outright soporific.

In many ways the television camera tends to solve most of the objections to these methods, although it also introduces its own technical problems. The camera delivers pictures equally well to any sized group, at any distance from the interview room. Skillful handling of the camera to focus on the patient's facial responses fortifies the direct observation with a minimum of distraction. By conducting the interviews in the privacy of the physician's office, the only limitations to presentation are ethical ones.

The use of television as an adjunctive method does not relegate motion pictures into oblivion. There still is room for the continued use of selected recordings on film or tape, since the intensity of response to television is only matched by its evanescence. Routine recording of televised interviews is not now practical, since it leads to an expensive accumulation of 16-mm. film mileage, difficult to edit and troublesome to utilize. In the future, videotape and thermoplastic tapes will offer possibilities because of the easy reuse of the recording strips. Departments may then accumulate a library of classic or rare cases which can be used at any time by student groups for further analysis and which would also allow systematic selection of teaching material.

Personnel

Instructors.—The psychiatric instructors functioned in three ways: as interviewers, as interlocutors, and as observers in the classroom. Every system selects the human beings who can function in it; and, conversely, people who operate any communication system alter it to fit their needs and limitations. In this sense each psychiatrist who for the first time interviewed a patient on television had to learn the simple stageplay of the TV interview room. Through feedback from observers he then had to modify his conduct in order to use the medium more effectively. Such healthy criticism must be continuous in any group concerned with television as a teaching medium. Once the interview room and its furniture are properly arranged for the camera, a good deal of leeway for individual behavior is possible, although it is usually desirable to minimize the psychiatrist and maximize the patient.

The interlocutor standing at the classroom receiver can make important explanatory comments which may be extremely illuminating, notably when a method is being demonstrated. The interlocutor is a principal critic of the interviewer and of the technical programming, since he is the most experienced person at the point of delivery. A constant reciprocal effort among the members of the instructional team will result in improved case presentations.

Almost all our television demonstrations were followed by group discussions, and we have found it exceedingly important that the group leaders be present as observers during the clinical segment of the instructional unit. In addition to being familiar with case details, the instructors can achieve a smoother and much more cohesive group interaction, fortifying the experience for the students in a more meaningful way. Since students frequently identify very strongly with the patient and react with varied emotions, it is imperative that these emotions be dealt with subsequently during the small-group sessions.

Students.—In large-group teaching situations the one-way passage of information from instructor to students raises serious questions regarding student participation, so essential to learning. Television appears to facilitate far more participation than do lectures. From the reactions of students it became quite clear that televised case material created very active internalization far beyond the short-lived passive acceptance seen in lectures. For the case-hungry freshmen, TV has a revelatory quality which makes it almost mandatory to include such

sessions regularly in the future. For the laboratory-saturated sophomores the clinical nature of the cases added vastly to the intrinsic interest of the course. Pointed questions and spontaneous responses to incidents during the interviews provided overt evidence of participation. For the seniors the sessions offered an opportunity to pit their wits against the instructor in the subsequent discussion period. Independent student judgment was clearly visible in those sessions.

Patients.—Patients who enter a teaching medical center aswarm with students usually know that the expert care they receive is partly paid for by their being the subjects of learning exercises. They soon learn to accept being under observation. However, it is in keeping with medical ethics always to obtain their permission for such televised interviews, even if only by stating that other doctors or students will be observing them while the interview proceeds.[5] In the absence of any reinforcing stimuli the patient has no awareness of being under surveillance, and therefore the apprehension of being observed usually is not maintained after other feelings move into focus. The television interview, maintaining the privacy of the doctor-patient relationship, here has its greatest advantage.

Of 91 interviews during a 4-year period, only one patient (a nurse) showed hour-long awareness of being under observation. The psychiatric resident did confess to tension during the first 9 hours of his duress on camera.

Television staff.—Members of the television staff had to work out the technical problems of installation and modifications for optimal use of the equipment. The cameramen as well as the monitors of classroom receivers were often intensely interested and involved in the cases they were televising; but usually there was only scant recognition of the relevance of certain elements of the patient-doctor relationship as it evolved. Since there is a worthy precedent for the use of medical student projectionists for motion pictures, television cameramen who also have had psychiatric experience, such as psychiatric residents, might conceivably provide a greater degree of camera analysis to the benefit of each demonstration, and could participate in subsequent discussions with a perceptiveness born of their task. With further foolproofing of cameras this should become possible.

[5] Telling them that they are being televised suggests broadcast TV and invasion of their privacy; hence a less specific statement is made.

Psychiatric Content

Through television were shown the skills of interviewing technique, psychological exploration, and the complicated process of arriving at a diagnosis. The clinical material showed beautifully the obstinacy of clinical psychiatric syndromes, their widespread occurrence, and the seemingly innocent appearance of many cases. Television was able to portray the skill of the clinician as he derived various generalities from specific observations, and to indicate how accurate diagnosis cannot be hastened, but often awaited the pursuit of trifling clues. Some of the most instructive cases were those difficult problems which resisted the psychiatrist's effort to explore fully.

The role of supportive psychotherapy was demonstrated, but often unconvincingly. Not much more convincing was the demonstration of expressive psychotherapy, which attempts to bring about changes over a long period of time through the interpretive process. However, students were given a glimpse of the interpretive process, of the slow, meticulous, week-after-week technique, with its concern for repetitious problems, which ultimately leads to alteration of behavior. The demonstration of lengthy psychotherapy in a single patient was discontinued partly because of insufficient interest among students. Quite possibly because of decreasing student motivation, television may not be a very suitable method for any process which extends over a prolonged period of time.

The unique verbal and nonverbal interactions in psychiatry create a relationship

which is the basis of any therapeutic effort. This unseen medium between the patient and therapist cannot be described or taught too easily. Permitting the student to experience this interaction in a vicarious way is probably superior to any descriptive efforts. Television elicits both this intimate process and the clues which the psychiatrist uses. Perhaps such experience is a proper bridge to real responsibility with patients.

No attempt was made to present severely disturbed psychotics from the in-patient service. We have felt that sound psychiatric education should not emphasize such psychopathology whose impressiveness is quite disproportionate to its teaching value.

Television lends itself to the presentation of certain basic concepts. The bewildering complexity of the human personality is readily highlighted. Through hypnosis was illustrated the existence of unconscious processes; the lesson was forcefully made that nothing is really forgotten or deleted in the mind, but that past experiences are permanently retained. Another concept revealed was the existence of inherent biological processes at birth as contrasted with subsequent psychic growth through the accumulation of experiences.

Range of Television Applications

Certain of the unique aspects of television suggest possibilities well beyond the limited applications which we have so far undertaken. We have utilized television essentially as a means of demonstration, that is, to show the existence of certain psychological processes and the delicate interplay of a doctor-patient relationship. However, there are many other ways in which television can or has already been used by other investigators.

Clinical supervision.—TV could conceivably become a most versatile tool to provide supervision at various levels of clinical psychiatric experience. Medical students and interns during their outpatient assignments should be given opportunity for independent management and diagnosis of patients with psychiatric disturbances. Residents in medicine, pediatrics, and psychiatry, as well as psychiatric social workers and nurses, could gain from "over-the-shoulder" TV supervision by a member of the psychiatric faculty. Wherever teaching is combined with clinical services, the television camera may well provide surveillance by a psychiatrist without any detriment to the doctor-patient relationship. The televised session can provide the attending staff with accurate information about the patient; this will assure proper disposition of the case, a factor of great importance because the patients are the primary responsibility of the faculty rather than the learner. A small television camera and microphone serving each outpatient cubicle, delivering picture and voice to the supervisor's monitors and tape recorders is uncomfortably reminiscent of Orwell's "Big Brother." However, the hazards of such a method must be critically measured against its potential gain. The ominous "Big Brother" feeling perhaps can be neutralized by judicious situational handling and by unqualified insistence upon confidentiality for all participants.

The sentinel TV camera.—At St. Francis Hospital, Mason City, Iowa (11), and in the Nebraska Psychiatric Institute (29), a serious effort has been made to utilize television cameras for observing wards and rooms, both to relieve critical nursing shortages and to permit observation of critically ill, confused, postanesthetic, and suicidal patients. As cameras grow smaller, more automatic, and cheaper, we can expect more widespread use for such purposes. Psychiatric services in hospitals and clinics will then adapt the "vigilant vidicons" to their special needs.

Psychotherapy.—Our own use of television appears to be a fruitful approach to psychotherapy through better instruction of residents. Temple University (10) reports a limited exploration of similar possibilities. Martin *et al.* (13, 14) and Tucker (28) suggest that commercial television programs may be employed for group psychotherapy. Their reports, however, lack controls, rely upon impressions, and employ unselected therapeutic stimuli. Notwithstanding, the

potentials for group psychotherapy warrant careful investigation.

Testing.—Television could be profitably used for the construction of more effective examinations. Carpenter and Greenhill (5) in a 1956–57 course in Air Science have conducted a useful test by television which consisted largely of visual materials. Earlier, in 1953, they had constructed a useful performance test on film (6). An important new contribution is the recent work of Stoller and Geertsma (25) and Rose (19), who have utilized filmed psychiatric interviews for student examinations. Such recordings may be typical of cases which may walk into any doctor's waiting room and so represent the challenge of daily practice. Insofar as they can be selected to fulfil certain criteria and can be standardized, such visual recordings can help to define the area of useful knowledge of the student. But above all they appear to test the ability of the student to think and associate when utilizing psychiatric materials under circumstances where the tensions of the doctor-patient relationship are replaced, if only in part, by the tensions of the examination room. Furthermore, as Stoller and Geertsma have demonstrated, such recorded objective material eliminates in large measure the subjectivity, individual bias, and other factors which plague examiners. By pre-testing or simultaneous testing of faculty members, television or film tests should be more reliable and fairer than many tests now in use.

As a projection into the future one might postulate that specialty board examiners might include televised interviews of candidates examining selected patients. One such experiment has been tried by Bird and Moore (3).

RESULTS AND IMPLICATIONS

The characteristics of the television screen are also a source of its usefulness in education. Here, as in commercial television, the impact of the screen in based on the "immediacy effect," the feeling that "you are there." Equally strong is the holding power of television, the well-known fascination for the screen face which may potentiate the visual image beyond the stimulation of physical presence. The television screen becomes a visual magnifier with a minimum of distraction and distortion.

In psychiatry the need for privacy of communication is of fundamental importance. No valid psychiatric interview can ever be conducted in the presence of anyone other than the patient and psychiatrist, since the presence of a third person or any other distraction changes the very nature of the relationship (24). In surgery the risk of physical contamination excludes all but a handful of participants from the operating room; in psychiatry the presence of extraneous persons can psychically contaminate the setting. Television enables us to avoid such psychic contamination.

Medical education should provide the maximum possible number of first-hand experiences (24). However, psychiatric education in particular has been guilty of providing insufficient first-hand experience for students. Many psychiatric observations may still have to be reported, because their nature precludes their being available for direct experience; but, whenever possible, clinical first-hand experience is as essential in psychiatry as in cardiology. For many years education in psychiatry has relied on second-hand descriptions, conclusions, and implications. Few opportunities have been provided for the student under supervision to make his own direct observations toward a more meaningful learning experience. To see and hear and become involved in a case in progress is far more powerful than to be told about it. Because of the requirements of privacy in psychiatry, first-hand guided participation by students or residents has been almost impossible. With television the curriculum now can be considerably enriched. The student who witnesses a psychiatric interview on TV enjoys almost a first-hand experience, because it is as if he were present in the consulting room. Conversely, the psychiatric resident with a patient in his office can sharpen his technique

through a consultant who guides him via a TV set.

The televised interview is a more realistic and truthful representation of the interaction than is audio recording or verbal reporting. The latter media give undue emphasis to verbal content and omit nonverbal communication with its range of gestures, facial expressions, bodily movements and postures, all of which are perhaps just as important as the spoken word in the interaction.

Television seems to enhance considerably the process of identification which is so invaluable in any learning process. Because of the feeling of "being there," a student can project himself more readily into the position of the clinician-teacher and experience the situation as if he were in the teacher's place. This process of identification is particularly important in psychiatric education where one deals with far more personal anxiety in the student than in other areas of medical education. The converse effect of identification with the patient is probably also facilitated. This effect can become useful in the learning experience of the student if recognized by the instructor and properly dealt with in subsequent group sessions. It can become a corrective experience and set that pattern of progress from subjectivity to relative objectivity which is so crucial in the complicated process of becoming a physician.

SUMMARY AND CONCLUSIONS

Over a period of 4 school years black and white television has been used for 91 periods of behavioral observations, including three regular courses for medical students and one for residents in psychiatry. By contrast with the familiar shortcomings of amphitheatres, auditoria, classrooms, and one-way mirror viewing rooms, the concealed television camera appears to offer solutions for many problems of instruction and learning in psychiatry. Analysis of patient-psychiatrist interactions appears to be improved, and both content and method make greater impact on the student without the emotional involvement implicit in personal clinical experience.

In two formal lecture-demonstration courses in psychodynamics and psychopathology, classes of approximately 100 students each showed higher interest levels and greater responsiveness. These object-lesson interviews of selected cases presented by television provided specific psychiatric materials but also personal identification with the psychiatrist and empathy with the patient. Television lends itself to the teaching of both basic concepts and methods. In a year-long weekly discussion-demonstration in psychotherapy for groups of 25 senior students, again a higher student interest was spontaneously manifested than with prior experiences utilizing a one-way mirror room. Psychotherapy appeared to be singularly rewarding and provocative as a method of learning for residents; television appeared to enhance their understanding of interactions.

The black and white vidicon-tube television camera is relatively cheap, reliable, efficient, simple in operation, and convenient in size. It is an instrument readily adapted to the needs of the individual instructor and requires a minimum of technical support. Television cameras are now handled by technicians but perhaps ultimately might be handled by the psychiatric staff itself for greater precision and control of content. Pictures can be delivered with ease to individuals or to groups of any size anywhere in a medical center, or outside it by microwave and closed circuit broadcast. Functioning as an unobtrusive instrument of analysis of behavioral patterns and psychiatrist-patient interaction, television would appear to be incomparably the most facile teaching tool yet delivered into the hands of psychiatrists.

For individuals, small groups, or large groups alike the intimacy and privacy of the television-mediated psychiatric situation apparently are of high impact of an order not far distant from personal experience, and maintain privacy and confidentiality. TV does provide concrete experiences almost identical with and therefore truly prepara-

tory for the challenges of the physician in actual practice, omitting only responsibility and interpersonal relationship with the patient. It appears to stimulate vital internalized and participative responses from students, even when they are in large groups.

Evaluative studies are now called for. It is likely that television will be considered an increasingly valuable tool of psychiatric teaching at many levels. Extensions of the application of television to psychiatry in its many direct or integrated aspects are suggested for undergraduate, graduate, and continuing education and for its allied medical sciences.

ACKNOWLEDGMENTS

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Teaching Neuropathology to Second-Year Medical Students

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Precept cannot anticipate all the conditions that may confront a teacher in the classroom, all the procedures the inspiration of the teacher may produce or the behavior of the pupil may suggest. Nor is it possible to describe with exactness all the qualities of the teacher who is master of his craft. Hence all writings on teaching suffer from an incurable weakness. But they are not therefore unnecessary.

E. R. Hamilton (2)

It is intended in this report to consider the objectives, methods and modifications, and evaluations of the teaching of neuropathology for sophomore medical students. The topic is part of a plan to teach the neurologic sciences in all 4 years of the medical curriculum, but consideration is given here only to neuropathology. The time allotted is 24 hours for the combined lecture and laboratory sessions. Neuropathology is taught for a week and a half on alternate mornings, and part of one Saturday morning. Physiology and Pharmacology are also taught during this time and consume a larger portion of the week. An important feature is that a few days before classes begin the students are given approximately 100 pages of mimeographed material on diseases of the nervous system. The students number approximately 50; their preparation includes 77 hours of neuroanatomy and 12 hours of neurophysiology in their first year of medical training.

Neuropathology is a subspecialty with consequent difficulties for the subspecialist-teacher: hours are short, some members of the faculty and medical profession lack interest in the subject, students may have other concerns, and any subspecialty has limited appeal. The subspecialist firmly knows the interest and value of his discipline and usually desires more teaching hours, but as an educator he realizes that balance is important in medical training. In the brief time available for the entire medical course, if additional hours are given to the subspecialist, other groups must yield time. The decision of the faculty regarding numbers of hours for most topics is arbitrary. Committees often study the problem by comparing their allotted times with those of other schools, but this is similar to one blind person consulting another about smoke signals! The subspeciality may even be opposed by persons who believe in the importance of their own work, and who devaluate topics peripheral to their own pursuits by saying, "I am able to get along without a knowledge of neuropathology; therefore, the medical student can." The student even without such pressures may treat the subject lightly, or spend his time on other topics when stress is applied from more time-consuming subjects. Finally, the subspecialist is mortal and desires students to propagate the faith; but his competition is severe, and he must make additional efforts because his time with students is short.

Objectives.—The objectives of the instruction in neuropathology have undergone much revision during 5 years. The present objectives are: (*a*) to review neuroanatomy throughout the instruction period, attempt-

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ing to make it meaningful to the student in relation to disease processes, (*b*) to introduce students to the major etiologic categories of disease of the nervous system, (*c*) to illustrate the disorders by lectures, discussion, pictures, gross demonstrations, and microscopic slides, (*d*) to stimulate the student to consider the pathogenesis of disease, (*e*) to furnish a background for understanding the function of normal and abnormal nervous systems, (*f*) to guide the student in learning, to stimulate him to think about his learning processes, to enable him to improve his learning methods and the teaching methods of the instructor.

Lectures.—Students receive a list of subjects and dates of lectures, and are encouraged to read the notes before class is held. The lectures include seven etiologic categories: developmental, neoplastic, inflammatory, retrogressive, vascular, metabolic, and traumatic. Some topics require more than 1 hour.

The lecture begins by informing the listeners not only of the topic, but also of the major headings. The student then appreciates forthcoming events, and is better able to grasp the contents of the lecture. This method has been expressed as "tell 'em what you're about to say, then say it" to which may be added, "then tell 'em what you told 'em." The reluctance of the teacher to repeat may decrease when it is recalled that about 50 per cent of verbal communication is lost within a few hours (3).

Two principles of teaching not used at first became a feature of the lecture hour. These principles are that the student learns from mistakes or ignorance revealed publicly (if not too painful), and that active verbalization aids learning. For these reasons, "eye-opening questions" were introduced to begin the lecture at 8:30 in the morning. These verbal questions are based on the assumption that the student has read the mimeographed notes. The questions deal mainly with definitions of words and concepts. "What is the difference between congenital and hereditary disorders?" "Define degenerative disease, vitamin, metabolism," etc. The question is asked (hopefully to have everyone thinking about the answer), then a student is called upon, and another man addressed promptly if ignorance is apparent. Questions asked before peers have a stimulating effect upon most students, although some are distressed and are not easily comforted. Humor is an essential element in decreasing the tension.

The lectures initially were intended to convey large amounts of information and to present many diseases, but the mass of material has decreased each year. The reduction was accomplished mainly by elimination of rare disorders, arguing that sophomore students would not and perhaps should not remember rarities, that they could refer to notes or textbooks if interested, and that time should be devoted to better understanding of fewer diseases. For example, twelve gliomas were cited in the first lecture on brain tumors, but the student is now expected to have extensive knowledge of the three most common gliomas: glioblastoma multiforme, astrocytoma, and medulloblastoma. He is encouraged to read the notes or references about other gliomas but is informed that questions on these rarer tumors will not be asked in the examination. The latter may effectively inhibit some students from studying all gliomas, but it is hoped these men will know the common ones better and will retain this information longer. Time is limited, and students cannot absorb everything the specialized instructor believes important.

The disease entity is introduced with a succinct clinical description because most students are better able to see a reason for knowing pathologic material when they have even a glimmer of clinical knowledge. The macroscopic and microscopic appearances are discussed with many illustrations. Pathogenesis is considered in detail, and evidence related to conflicting views is considered.

Students are encouraged to interrupt the lecture at any time to ask questions. Free interrogation during the lecture initiates thought, increases student interest, and

makes the lecture an active, changing technique. Occasionally the questions reveal that students are foggy about a problem exquisitely simple to the instructor, and the issue may be clarified for the entire class. These questions may be asked to embarrass the instructor, but the students are aware of this, resulting in an interested audience, an end greatly desired by any speaker. Methods therefore were devised to encourage questions during the lecture because questions will not come forth merely by stating they are wanted. Respect for a question is the easiest way to produce queries; a cheerful interest in the students aids interrogation by them. The inquiring student may be thanked publicly for the question, asked if the answer is satisfactory, and care always taken to answer fully. The instructor must be able to face chagrin gracefully when tripped or found in error. An ability to laugh at oneself, to say "I don't know" (but not too often!), and a genuine desire for questions are absolute requirements for free questioning by students.

Questions are valuable for the teacher and may improve his learning. When the same general topics must be repeated year after year, questions furnish the instructor with new views of the problems, better ways to present material, and even may result in ideas for research. Students should be reminded that they need not fear seemingly stupid questions, because the answer to a minor or "foolish" question may help in understanding larger topics, and that what seems silly to one person may be important to another. "Why" and "how" are important words in teaching and learning any science. If all else fails when the instructor asks for questions, he can wait silently. Most persons find silence so difficult that a question soon arises, and other queries then flow freely. With these simple methods, the lecture becomes an active exercise rather than passive transfer of information from one notebook to another through a tape-recorded teacher.

An initial assumption that students knew neuroanatomy because they had attended a course as freshmen was promptly found a flagrant error. Another principle of good teaching became apparent: review of previously taught material aids learning and places the new information in perspective, especially when applications or additional developments are presented. Allport (1) has likened the review to laying fresh cement for holding new bricks in place. It is unfortunate that the catch-phrase "spoon-feeding" is so ingrained in the thinking of many teachers in medical schools that they fail to use certain techniques capable of stimulating students. A scholarly view is that learning is pleasurable and an end in itself. Why prevent students from enjoyment of the pursuit of learning? They may be prevented from such pleasure by too frequent use of "look it up yourself" by teachers who fear spoon-feeding. The material presented to medical students is difficult and often overwhelming; easy methods of learning are therefore desirable and necessary. The argument is not against active reading by the student, but it is suggested that the teacher use directive techniques with thought and design rather than evade a question because spoon-feeding is considered taboo. The review may incite the student to a more detailed study at a higher level, if the reply is stimulating.

Two hours to review neuroanatomy therefore were inserted at the beginning of the lecture series. These discussions are based on lantern slides of myelin sheath stains, but function is stressed, and those structures are considered which will be shown in the later presentation of neuropathology. Pathologic material to illustrate anatomy was added to prevent repetition of the preceding course and became useful in achieving a new view of anatomy. For instance, a slide from a case of tabes dorsalis with demyelinated posterior columns may be projected after discussing normal structure and function of fiber tracts in the spinal cord. A student is asked first for a description of the lesion, and then for the symptoms of the patient. Students suddenly realize they can understand some aspects of tabes

without a clinical presentation, by knowing structure and function. Inaccurate speech is not permitted, but rejection should be gentle. When a student describes the tabetic spinal cord, and says "*your* spinal cord is pale in the fasciculus gracilis," he may be congratulated on his knowledge, but informed that the ability of the instructor to walk in the dark indicates that the spinal cord is not his. The same slide is used in the lecture on inflammatory diseases, and attention is called to the fact that the slide had been shown earlier.

Laboratory.—The laboratory exercise initially was a formal session in which students were given sets of slides and told to examine this material in light of the preceding lecture. The atmosphere of the session was soon changed to an informal one. The students were told they had complete freedom in the laboratory, that they need not attend unless they desired, and desire should be based on value received. They were informed they could examine microscopic slides with guidance from the instructor, if this method helped their learning, but that they were not responsible for details of microscopy. The premise is that understanding of disease processes is more important for second-year students than detailed microscopic anatomy. They are encouraged to re-read their lecture notes or references, and to ask questions about any aspect of neuropathology. The lantern slides used in the lecture are placed in a projection box for review. Brain slices of relevant material are distributed in the laboratory; some students are stimulated by the handling and viewing of gross material. Brief discussion of the clinical problems adds further interest.

The student and his learning.—Learning and the process of learning are dealt with in various ways. A student in class may be asked to define the purpose of a lecture. The question is disconcerting, because many students assume that lecturing is inevitable, and come to observe the show rather than play a role in it. After brief discussion, they are told that the purpose of the lectures is to illustrate and to stimulate. They are encouraged to compare the promise of the lecturer with what he delivers, because they then have an additional reason for listening. Emphasis is given to the necessity for learning a subject to acquire knowledge rather than to pass the examination. Recently an experiment was made to reinforce this idea. These students were assured that everyone would pass if he wrote the examination paper legibly. They were told that study should be for the sake of learning, and to be a better physician; individual interests could be pursued—no one need dread a failure because everyone was guaranteed a passing grade. This experiment understandably produced favorable comments from the students, but, more important, if their judgment can be trusted, learning was promoted.

Further experimenting was done with the examination as a teaching rather than an evaluating tool. Originally, the test at the end of the session was the essay type. The graded papers were returned with many written comments, but it was difficult to know how many students reviewed the graded paper, and especially if they tried to correct deficiencies in knowledge. Because interest in the subject and emotional tension are highest in relation to the quiz, the time is ripe for reinforcement of learning. An hour is now set aside for review of the examination immediately afterward. Representative answers are read from papers at random, with appropriate comments. Heated discussion soon steams from aggrieved students! On occasion, a man has reviewed the literature to obtain the necessary data for refutation. Such a person has had a valuable and memorable experience he will proudly tell his grandchildren. The students are encouraged to discuss their grades and to see the instructor whenever a question arises, no matter how small. Learning is enhanced when interest is aroused, and therefore any occasion may be used for additional teaching.

Only one objective test has been given on this subject. The correct answers and the reasons for the distractors were discussed in the review hour, but individual students

were concerned mostly with misunderstandings of questions they had answered incorrectly. Many instances of poorly phrased or misleading "objective" questions were thereby revealed. The objective examination was therefore a valuable experience in test-construction, and enabled comparison of previous experiences with essays. The following personal observations were made.

Questions with five choices too often must deal with minutiae. One answer must be "correct" or "most correct," hence problems without such answers cannot be considered. Each question is isolated from the other, making it difficult to test broad understanding. Truly discriminating questions require much time and thought. The objective examination is convenient for the instructor, giving him an ability to grade easily and sharply; but good teaching is hard work, and the significance of fitness to practice medicine as judged by an 87 versus an 83 is questionable. It is true that wider areas of knowledge may be tested by this method, but the person who has knowledge in depth of fewer subjects may be penalized. Students learn more from organizing a reply than from blackening a square, and essay questions can be framed more readily to induce thinking. A personal favorite is to ask the *pro* and *con* of an issue (e.g., "examinations are a good means of stimulating learning" or, "Huntington's chorea and Sydenham's chorea are similar disorders"). Formulating both sides of a question is a useful exercise for anyone.

Evaluation.—The principal technique of evaluation is a request for an unsigned letter before the examination. At first, the students were asked only to comment on their reactions to the subject, but the yield of information was increased by specific questions. Students subsequently were furnished specific questions such as the value of the oral quiz before the lecture, and were asked to suggest any improvements. These letters contain highly subjective and biased material for evaluation, but they may be used as guides. The critical comments have resulted in improvements, as, for example, when a student commented that too much time was spent on tumors, and too little in the study of strokes and other disorders he thought would be more common in his future practice. It is hoped the reactions of students can be used in future years to continue guiding the teacher and his teaching.

Summary.—A 5-year evolution of teaching in neuropathology is reviewed, and the problems of the subspecialist considered. Techniques for making a lecture "active" are discussed, with various methods used for inducing students to question the lecturer. The value of review of previously taught material is stressed as well as the use of examinations to teach rather than to produce ranking or magical numbers. Suggestions by students may be used to guide teaching.

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ABSTRACTS

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FROM ART TO SCIENCE: AN EXPERIMENT IN TEACHING THE PSYCHOSOCIAL ASPECTS OF THE DOCTOR-PATIENT RELATIONSHIP.

SAMUEL W. BLOOM, HOWARD B. KAPLAN, and WILLIAM T. LHAMON. (Dept. of Psychiatry, Baylor University College of Medicine, Texas Medical Center, Houston, Texas)

The rapid advance of medical science has challenged, in an unexpected way, the adequacy of existing methods for educating physicians in the socio-emotional requirements of medical practice. One response to this problem has been to add social scientists to the medical faculty, and to initiate, under various departmental auspices, programs which attempt in a systematic way to teach knowledge, skills, and attitudes relevant to the doctor-patient relationship.

As part of the freshman course in psychiatry at Baylor, a series of lectures and clinical conferences has been devoted to basic sociological concepts. The teaching has tried to utilize materials which are specifically relevant to medicine. For this purpose, the doctor-patient relationship came under intensive scrutiny from a sociological point of view.

Viewed as a teaching experiment, this course has been taught over a period of 4 years. A textbook was written, designed specifically for use in teaching the psychosocial aspects of the doctor-patient relationship. Also, a casebook was prepared, with a collection of what were regarded as important basic papers in this subject area. An evaluation study of the course was begun in 1960.

This paper proposes to review the major concepts from sociology and anthropology which have been taught in the course, and to give a preliminary report on the evaluation study of student responses.

Following, in brief outline, are the concepts which were most basic in both the lectures and the textbook: (*a*) the scientific method as it applies to the study of human behavior; (*b*) culture as the matrix from which the form of the medical profession is derived, and as the source of variable definitions of illness and value orientations toward the sick role; (*c*) social role, as applied to patterns of expectation about how doctors and patients "should" behave in our society; (*d*) interaction process as the dynamic framework for viewing the doctor-patient relationship as a small-scale social system; (*e*) social institutions, as illustrated by recent studies of the social structure of hospitals.

The textbook and casebook were mimeographed, assigned to students on an optional basis. They responded by reading much of the material as assigned. They distinctly preferred the textbook over the casebook of readings. A large majority found the reading interesting and believed it would be useful to them as doctors. Fifty-seven per cent re-

garded them as an important or essential part of medical education which should be required. Virtually none recommended against the use of this kind of material entirely. As many as 70 per cent expected to read further in the materials after the course was over.

There were, of course, some negative reactions to both the course and the readings. These will be discussed in the completed paper.

The major purpose of the proposed paper is to provide a substantive outline of methods and content from the social sciences which appear to be demonstrably relevant to medical education.

THE SOCIAL SCIENTIST IN THE MEDICAL SCHOOL: AN INTERPRETER OF CHANGING SOCIAL PATTERNS. WALTER E. BOEK. (Research Anthroplogy, Executive Division, New York State Department of Health, Albany, New York)

Medicine today is practiced and taught in a rapidly changing social environment. Among the more important of the changes are (*a*) a growing public sophistication in medicine, (*b*) an emerging concept of the individual's "right" to good medical care, (*c*) an increasing importance of the "third-party" in the doctor-patient relationship, and (*d*) an intensifying competition with other fields for suitable students in an expanding program of medical education. Simultaneously, medicine itself is beginning to emphasize and implement the Hippocratic philosophy that, in healing the sick, social and emotional factors are as important as physical ones.

Social scientists, like physicians, have a tradition of dedicated service to mankind—perhaps the essential feature distinguishing a profession from a trade—and are also concerned with the dynamic interplay of internal and external forces on the individual. In the areas of health and medical care, the interests of these two professions coincide; and for mutual benefit, a closer cooperation than in the past is clearly indicated. As with all important changes in medicine, this rapprochement must begin in the medical school. Here the social scientist, drawing on his specialized knowledge and experience, can contribute first by interpreting to faculty and students the social changes affecting patterns of medical care. Second, directly and indirectly he can assist in developing in students the desired holistic approach to patients—directly, by participating in both classroom and clinic teaching, and indirectly, by helping adapt the curriculum so that students see in the patient a person rather than a "case." Third, he can materially assist in the most difficult but vital part of undergraduate and graduate medical education—that of fostering, or at least preserving, the motivations necessary to keep the practitioner continuously striving to improve his skills, to assess new information critically and utilize effectively that which is sound, and to avoid the all too easy short-cuts in diagnosis and treatment.

To realize fully the potential value of the social scientist in medical education, he must be completely integrated into the team of basic and applied scientists comprising the medical school faculty and must take his share of responsibility in all the functions of the school—teaching, research, and service.

INTEGRATED MULTIDISCIPLINARY UNDERGRADUATE CANCER TRAINING. SAUL BOYARSKY and HERBERT VOLK. (Dept. of Surgery, Albert Einstein College of Medicine, New York, N.Y.)

Advances in cancer and allied fields have transcended traditional boundaries of specialties; problems presented by patients with neoplastic disease are often better met by a Tumor Board than by a single specialist. A program of multidisciplinary undergraduate cancer teaching was evolved in a new university medical center through the medium of a Tumor Board.

At the Albert Einstein College of Medi-

cine—Bronx Municipal Hospital Center, a Tumor Board was organized of members of each department and division. Its sessions were integrated into the teaching program of the junior surgical trimester.

The nucleus of the board included the cancer coordinator, surgeon, pathologist, radiotherapist, radiologist, and the clinician responsible for the patient. Other members participated in specific sessions.

The course material was determined after a survey of the clinical curriculum with the following objectives: (*a*) multidisciplinary participation by specialists presenting recent advances, (*b*) choice of course content to supplement the existing curriculum, (*c*) awakening of interest in neglected areas of neoplastic disease, (*d*) presentation of concepts important to the field of cancer, such as cancer detection, early diagnosis, chemotherapy, radical surgery, etc.

Administration was carried out by the cancer coordinator and staff. Support was obtained from the Undergraduate Cancer Training Grant of the National Cancer Institute.

Liberal use was made of audio-visual aids, movies, symposia, and bibliographies. The format of each session varied to meet the needs of the material presented, but started with a patient presentation. For freshness of approach, the content and message of each session were suggested by the faculty participants; to maintain unity and purpose, the cancer coordinator and his staff organized and moderated the session.

Topics covered in the most recent trimester are tabulated with title, message, and formal presentation.

CHRONIC ILLNESS: A LESSON FOR MEDICAL EDUCATORS? FRANCIS E. BROWNING. (Dept. of Preventive Medicine and Medicine, University of Rochester School of Medicine, Rochester, N.Y.)

Traditionally, medical education has been oriented largely to the in-hospital patient. Hospitals have viewed their function in monolithic fashion, again oriented to the in-hospital patient. An aging population which is increasing the incidence of chronic illness, the evolution of the concept of comprehensive medical care, and the rapid rise in the cost of hospital care are among the factors forcing a re-appraisal of present methods of meeting the health care needs.

A study of chronic illness in Rochester and Monroe County was completed in 1959. Data were obtained from 3,780 patients in eight general hospitals and four chronic disease hosptials, 30 nursing homes, eight homes for the aged, and the chronically ill patients at home known to health agencies in the community. From this total census group, 179 patients were studied intensively by a Clinical Review team comprised of an internist, a public health nurse, and a social worker. Emphasis was placed on current and anticipated comprehensive health care needs of these patients. It was evident that the existence of an adequate number of beds for the chonically ill and the existence of a large number of community agencies providing health care services did not insure the development of optimal care programs.

The study indicated that physicians have been slow in accepting the contribution of other disciplines in evaluation for and provision of comprehensive health care services. The need to develop new levels of care was apparent and included rehabilitation and organized home care programs, improvement in the quality of intermediate care institutions, and a continuing community appraisal of health problems and the facilities required to meet them.

Clearly, physicians have a stake in this, and communities look to the medical profession for guidance and leadership. Paradoxically, the practicing physician and the medical educator are often less aware of broad health care requirements than individuals representing community agencies.

Medical educators are faced with the task of teaching the expanding principles of comprehensive medical care as they apply to all levels of care in the community. It implies a respect for and the efficient use of other disciplines, agencies, and services in

evolving optimal care programs. To accomplish this, students and house officers must have the opportunity to observe and participate in efficient workable programs designed to embody these principles.

ATTITUDES TOWARD PROBLEMS OF PATIENT MANAGEMENT: A STUDY OF SENIOR MEDICAL STUDENTS. DAVID I. CHEIFETZ, JACK SAPORTA, and PAUL E. NIELSON. (Presbyterian-St.Luke's Hospital, University of Illinois College of Medicine, Chicago, Ill.)

During the past 2 years we have developed and used an attitude scale designed to reflect aspects of the physician's approach to patients. This scale is intended to tap various attitudes held by the physician toward his patient, toward himself, and toward the doctor-patient relationship. Although developed by a psychiatric setting, the scale does not test for psychiatric knowledge. Rather, it seems to reflect the degree to which the physician reacts to patient management problems in terms of attitudes generally held to be most productive of a sound approach to the patient. Attitudes measured are scaled along a negative-positive continuum. The scale was standardized on some 550 subjects including groups of premedical students, medical students, residents, and physicians who had been in practice many years.

This paper presents some of the findings from a study of approximately 400 senior medical students in a psychiatric clerkship. Attitude scales were administered at the commencement and close of the clerkship, and methods were devised to measure such shifts in attitude as did or did not occur. On the basis of an item analysis, we have extracted clusters of scale items which, when extrapolated, provide descriptive summaries of the following:

What characterizes the student physician whose attitudes toward patient management are negative by our definition? What sorts of patient problems evoke such negative attitudes and what elements of the student's self-concept as physician predispose toward negative attitudes? Given various negative attitudes at the beginning of a clerkship, which seem amenable to change during the course of the clerkship and which are more refractory? Which are the positive attitudes toward patient management which seem best established by the time the student has reached his senior year?

Finally, this paper discusses possible implications for medical education of the attitudinal findings described.

CHARACTERISTICS AND FUTURE PLANS OF MEDICAL STUDENTS ENGAGING IN ELECTIVE RESEARCH. JOHN T. COWLES. (Dept. of Educational Planning, Schools of Health Professions, University of Pittsburgh, Pittsburgh, Pa.)

This report is from a continuing study of the Experimental Training Grants Program of the U.S. Public Health Service: to describe and insofar as practicable to evaluate elective research programs for medical students at the thirteen schools participating in this U.S.P.H.S. program, whether summer, decelerated, or dropout in nature, and regardless of source of financial support.

Principal data have been drawn from an eight-page student questionnaire, school records, and supplementary interviews with students, faculty, deans, and program directors. One or more entire student classes were sampled at each of the thirteen schools. Of the approximately 2,500 students, most of whom had completed 2 or more years of medical school, 48 per cent had during that period performed at least one voluntary research project beyond the required projects of specific courses.

Research and nonresearch students differ substantially in regard to such things as: father's occupation, factors influencing choice of career, alternative career choice, undergraduate major, MCAT scores, marital status, work experience, leisure activity, research prior to medical school, elective

courses taken or desired in medical school, formal teaching experience, and plans for graduate work or for a career in academic medicine. Differences between research and nonresearch students appear inconsistent or insignificant for: age of career decision, college average, age on matriculation in medical school, rank in medical school, satisfactions or difficulties with research prior to medical school, and appraisal of required projects in medical school.

Other data are considered, such as time and departments for students' elective research and their authorship, other responsibilities, and satisfactions or difficulties in regard to projects pursued, or, reasons why nonresearch students have not engaged in research. Comparative national data from other sources are cited.

Implications for the future of medical education are discussed.

THE INTEGRATION OF PRECLINICAL AND CLINICAL TEACHING. Richard J. Cross. (University of Pittsburgh, Pittsburgh, Pa.)

Today's need for clinicians well grounded in the basic sciences is clear. The traditional American medical curriculum seeks to achieve this goal by exposing the students first to intensive premedical education centered in the laboratory, separated from and followed by prolonged clinical teaching at the bedside. For various reasons, attempts at correlation between these fields are not usually successful. "Integrated" programs, as at Western Reserve, represent a partial solution. Complete integration requires concurrent teaching of preclinical and clinical subjects throughout the 4 years, at levels of increasing intensiveness. Such a program should provide a high degree of flexibility, particularly in its last year, with ample time for elective activities. To obtain such flexibility the length of summer vacations must be greatly reduced. This will also permit more efficient utilization of our nation's educational facilities and may allow selected students a reduction in the number of years spent on formal medical education.

A number of possible curricula can be devised along these lines. The author's preference is for a "three-layered" curriculum, starting with about 30 weeks devoted to an "integrated" survey of the major preclinical and clinical subjects. This would be followed by six trimesters of about 15 weeks each, in the course of which most of the material now taught in medical school would be covered in alternating or concurrent intervals of laboratory and clinical teaching. Certain selected students would then spend the 52-week, fourth year in carefully supervised, rotating internships, thus saving a year of formal educational time. Others would embark on intensive study of appropriate clinical and preclinical subjects, establishing a firm foundation for later specialty training. Still others might prefer to devote most or all of the year to research.

MEDICAL AND HEALTH EDUCATION IN MAINE: OLD TASKS AND NEW CHALLENGES. J. A. Curran and George T. Nilson. (Bingham Associates Fund, Bethel, Maine)

Maine has a unique record among the ten states lacking medical schools. For a century The Medical School of Maine at Bowdoin produced most of the doctors practicing in Maine. Its closure in 1921, following the Flexner survey, has resulted in a serious decline in the number of Maine students entering medicine and the number of doctors entering practice in the state.

The Bingham Associates Fund in 1931 pioneered in regional medicine, eventually including 43 hospitals in Maine and 14 in Massachusetts. From an educational base at Tufts University School of Medicine and New England Center Hospital and a regional office at Augusta cooperation at student, internship, residency, and continuation levels and consultative services in administration, financing, nursing, technology, record keeping, social service, and dietetics have been provided.

After 25 years' experience the Smillie

survey* pinpointed unmet needs in rural and mental health, care of aging, nursing, and health education. Its findings have inspired a dynamic drive to achieve a comprehensive program of better medical care. State health agencies and organizations, governmental and voluntary, have been drawn into close working relationships.

Subsequent advances include: community clinic encouragement for rural doctors, a collegiate nursing school at University of Maine, a regional long-term care and rehabilitation program at Waterville, a full-time directed educational and research program at Maine Medical Center, mental health guidance centers at Bangor and Lewiston, practical nurse schools at Presque Isle and Waterville, a model nurse aide program at Rumford, career guidance seminars for college and high school teachers, a 2-year $50,000 scholarship program for promising high school seniors, and growing interest in founding a 2-year medical school. These efforts continue to gain momentum.

THE EFFECT OF URBANIZATION ON HEALTH SCHEMES AND PROFESSIONAL CARE. J. A. L. GILBERT. (School of Medicine, University of Alberta, Alberta, Canada)

During the last half-century and particularly during the last few years there has been a marked trend to urbanization. This trend has produced profound socio-economic changes as a result of which the public have demanded changes both in medical care programs and in the physicians administering them.

Alberta, for example, is a semi-welfare province with government-sponsored hospitalization, cancer diagnostic and therapeutic clinics, T.B. sanitaria, arthritis and V.D. clinics, provision for the care of poliomyelitis, and a number of prophylactic regimes. Added to this are a number of prepaid medical plans, so that 100 per cent of the population have hospital coverage and 85 per cent medical coverage.

The urbanites' concept of the modern physician is no longer that of the general practitioner of a generation ago. Today's physician is expected to be well grounded in social medicine, to have a sound broad diagnostic background, to be able to deal adequately with all the usual medical problems although probably lacking in the minutiae of specialist therapy and to render continuing care to the ever increasing number of chronically ill. Finally, he should be ready to refer problems to the appropriate specialist for indeed the public demands such referrals particularly since such service is covered by their insurance contracts.

Several factors have produced an increase in the percentage of specialists: (*a*) changes in the socio-economic status and coincident sophistication has put a premium on such services; (*b*) specialist service is covered by insurance schemes; (*c*) the ever-present possibility of state medicine with the implication that under this regime the specialists' position will receive more recognition than that of the family physician.

It would seem, therefore, that the public's concept of the ideal family physician of today is largely the result of urbanization with altered social and economic standards and prepaid medical plans. The continuing provision for the training of this physician will have to be made in medical education.

A PRELIMINARY REPORT ON AN ATTEMPT TO TEACH AN "ECOLOGY OF PSYCHIATRY" ON THE POSTGRADUATE LEVEL. ROBERT GRONNER. (Northwestern Univ. Medical School, Chicago, Ill.)

University teachers have observed that the level and the depth of integrated humanistic knowledge at the disposition of graduate students in professional schools are of uneven distribution, more so in medical schools because of the emphasis on science in the premedical course. The postgraduate training of psychiatrists cannot

* "Unmet Needs in Medical Care of Rural People, State of Maine, 1956" by W. G. Smillie and J. A. Curran, assisted by S. Ray and W. Rogers.

maintain a cavalier attitude in this matter, because the domain of this discipline is man's highest adaptive system, the psyche extending over interpersonal, social, spiritual, economic, biological, communications, and value aspects. It has to be viewed in historical as well as contemporaneous perspective. The young physician who has chosen psychiatry as his discipline of the healing arts is by definition more oriented toward the humanistic approach as a scientist, and thus he differs from the average medical student whom this author has often found unable to communicate abstract ideas or to make general statements in examination questions requiring an essay-type answer. Yet the well-known deficiencies in our secondary and often college education penalize even the gifted and interested student. Thus, the apprentice in a field so multidimensional as modern psychiatry is often overwhelmed by the multiple offerings and by the confusing variety of emphasis on this or that aspect of mental and emotional illness. And so are his teachers when they try to communicate their own hard-won perspective to avoid unscientific and unacademic parochialism or "stovepipe" vision.

During the academic year of 1959–60 a pilot experiment in the instruction of first- and second-year psychiatric residents on the campus of Northwestern University Medical School was conducted with the aim to improve didactic approaches that could offer an integrated view of the discipline in terms of its roots *and* how in turn it has affected medicine, the social sciences, and ultimately the manner of life yesterday and today.

Considering psychiatry a body of "knowledge in action," a technology and a science, though until recently ill-defined, the principles of ecology could be borrowed from the natural sciences. A survey course called the "Ecology of Psychiatry" was undertaken. In broad outline it endeavored to deal with the cultural matrix of deviate behavior and its management through the ages by the respective civilizations, attempts to conjure up the "Zeitgeist," to cast light upon the unity and diversity of human behavior. All cultures of import to our present civilization, as well as some on the periphery for purpose of contrast and diffusion-significance, were explored. In this undertaking, aid from other disciplines was sought by drawing in instructors in cultural anthropology. When the theme had been developed to the point of very recent (i.e., end of 19th century) psychiatry, the emphasis was shifted onto the "output" aspects or applied Psychiatry; contributions from specialists in such fields as Mental Hygiene, Pastoral psychiatry, Occupational Psychiatry, Forensic Psychiatry, etc., were obtained.

The primary aim has been one of unity and integrated viewpoint rather than a mixed multiple serving of facts, theories, and beliefs, avoidance of ethnocentricity without the fallacy of a "smorgasbord-like" offering, insistence upon the connectedness of human behavior and a steering away from a hierarchy of cause and effect. To what extent this experiment has been successful is unknown, perhaps unknowable, for some time. Many flaws became apparent and the next academic year will bring opportunities for improvement.

This presentation is a preliminary report not about a radically new approach but about increased emphasis and a possible way to its implementation. The subject matter itself is being taught in most psychiatric training centers. Exchange of experiences regarding the problem seem timely now.

CLINICAL FACULTIES AND MEDICAL SERVICE PLANS. C. T. HARDY, JR. (Dept. of Clinics, Bowman Gray School of Medicine, Winston-Salem, N.C.)

This paper is a discussion of the general problems of private practice by clinical faculties from the viewpoint of the doctors, the patients, and the institutions. It is *not* an explanation of the operation of our Department of Clinics. Almost all schools are concerned with the financing of clinical facul-

ties. The variety of problems and areas of dissimilarity between schools are recognized in the paper. The various plans presently used by schools are discussed in some detail and the advantages and disadvantages are touched upon.

The major points emphasized are:

1. Patient care should be accepted as one of the three legitimate functions of a Medical School rather than a necessary evil.

2. Patients and patient: Physician relationships must be considered in the development of a Medical Service Plan.

3. Faculty attitudes toward patients are of extreme importance in the teaching of medical practice to students.

4. A properly developed plan can release the clinical faculty from all details of practice except the professional work itself.

5. A strong effort should be made by all schools to develop a plan which follows the recommendations of the Liaison Committee on Medical Education.

CAN COMPREHENSIVE FAMILY CARE FOR THE FUTURE BE TAUGHT IN THE HOSPITAL OF TODAY? JOHN H. KENNELL. (Dept. of Pediatrics, Western Reserve University, Cleveland, Ohio)

A Family Study Program has been part of the revised curriculum at Western Reserve University. This program was started to provide early experience with patients, particularly in the areas of child development, preventive psychiatry, consideration of an individual as a member of a family, and family health supervision. A special student teaching facility for the care of a family was established.

Students in the first 2 years of medical school have been enthusiastic about this.

In the third and fourth years there has been a decrease in enthusiasm in half the students mainly due, we think, to the competition with pathology and the more dramatic problems in hospitalized patients. The students pick up the values of the hospital culture and make an identification with the interests of the stimulating clinical teachers on the wards where there are usually no arrangements for long-term care and counseling of a family.

If medical educators consider the objectives of "family programs" worth-while, should there not be careful planning by medical schools and teaching hospitals to bring these concepts into daily use by residents and clinical teachers? Only by presenting a more balanced picture of the physicians' role can students and residents see the importance of increasing their skills and knowledge "across the board."

EDUCATION FOR PATIENT CARE. ISIDORE LEVINE. (Dept. of Preventive Medicine and Medicine, University of Rochester School of Medicine, Rochester, N.Y.)

The changing patterns of medical care call for a more comprehensive approach to patients by interested, broadly trained physicians.

To educate students better in the understanding and handling of complex problems of individual patients we have established at Rochester a comprehensive care teaching program, the Combined Clinic. During the past 3 years, we have observed more than 200 students in a continuity program in our Combined Clinic.

This situation offers a unique opportunity to study student attitudes and performance over a prolonged period of time in regard to patient care. In this setting, we have become aware that a number of students have misgivings about the program, ranging from uninterest to hostility. The main grievance of these students is the "lack of significant organic pathology." They acknowledge that the patient should be cared for medically, but not by them. The frustrating situation of having to care for complex problems of this sort without any intellectual or emotional satisfaction leads to resentment. They find little that can be intellectually satisfying in the nonorganic aspects of a patient's problem.

These students have placed a positive value judgment on the "scientific" and technical aspects of medicine and a negative value judgment on patient care. Neither those students who do well in patient care nor those who do poorly are identifiable from their class standing, MCAT scores, or by the type of postgraduate work they intend to seek. We are disturbed by these student attitudes which are in part reflections of their own personality patterns and in part reflections of faculty attitudes.

If much that we do in medical schools is ultimately aimed at improved care of sick people, a closer inspection of our student and faculty selection and of the educational process is necessary.

EFFECTING A DECISION FOR MEDICINE: AN EXPERIMENT IN INFLUENCING CAREER CHOICE. LAWRENCE S. LILIENFIELD and JOHN C. ROSE. (Depts. of Physiology and Biophysics, and of Medicine, Georgetown University School of Medicine, Washington, D.C.)

The problem of attracting bright students to careers in medicine has become increasingly complex. To the uninitiated, the physical sciences now seem to offer the greater challenge. Our previous experiences with high school students suggested that a fruitful summer at a medical center offsets the effects of publicity given satellite launchings and influences positively selection of a medical science career.

To test this hypothesis the following experiment was undertaken. All local high schools were notified that this institution would offer a unique experience to junior students during their summer vacation. Selected students would join research teams consisting of faculty members and medical students and would participate in a formal program designed to show them a medical center in action. Students would receive a stipend of $100 for the summer. Applications were sought from students not seriously contemplating careers in medicine who could provide letters of recommendation from both a science or mathematics teacher and a social science, language, or English teacher.

Nearly 400 applications were received. About 200 were from superior students, and of these about 80 were from students both extremely well rounded and at the top of their classes. Since facilities were available for twenty students, twenty matched pairs were selected from the 80. One of each pair was randomly chosen to participate and the other to serve as a control. Both the experimental and control groups were interviewed and asked to complete questionnaires designed to determine factors that might influence their career choices. Interviewed students agreed to participate in a follow-up program whether selected or not.

It will require several years to determine whether this method of influencing career choice is effective. Meanwhile, the number and quality of applications received would indicate the existence of a large pool of excellent potential medical science candidates.

THE USE OF PRIVATE PATIENTS IN MEDICAL EDUCATION. R. A. MACBETH and W. C. MACKENZIE. (Dept. of Surgery, Faculty of Medicine, University of Alberta, Alberta, Canada)

A great deal has been written in the last few years, and doubtless more will appear in the years to come, lamenting the disappearance of the public ward charity patient and forecasting the consequent death of medical education. Over the course of the last 35 years the University of Alberta Faculty of Medicine has maintained a grade A accreditation and graduated some 1300 physicians in spite of the fact that a majority of the beds in its four affiliated general hopitals are occupied by private, paying patients who are used extensively in the teaching program. Recent articles on medical education would suggest that this situation is somewhat unique and is, in fact, a predicament which many schools view with alarm as a

probable universal development in the years to come. This growing alarm has been the stimulus which has prompted us to record our experience with private patients as instruments for undergraduate teaching and outline a plan of teacher-patient-pupil relationship which in our hands has been eminently successful.

It is our contention that private patients are exceptionally good teaching material, that for the most part they enjoy the experience of being used for student instruction, and that they are most cooperative, when approached with tact, in offering themselves for this purpose.

Doubtless much of the facility with which our private patients fit in to the over-all teaching program is due to their 35 years of acclimatization to the system. Almost every patient entering an Edmonton hospital, regardless of his ward status, expects to be used for student instruction. Our observation that this expectation is associated with anticipation rather than antipathy leads us to believe that our philosophy regarding teacher-patient relationships over the years has been well founded. A five-point program used in obtaining the permission and cooperation of the patient for use in the teaching program, and of assuring that the teaching exercise will be profitable to the student, will be outlined.

Medical educators who are already accustomed to use the private patients of other physicians for teaching purposes no doubt feel, as we do, that the current controversy over the use of private patients for teaching is, in truth, much ado about nothing. Certainly it demands a little more time and a little more consideration of the rights of patients as individuals than is often in evidence on public ward services, but in return the dividends are greater. As we see it, no major problems exist, though nowhere is it more true than here that attention to many small things brings success, though success is no small thing.

THE HEALTH TEAM EXPERIENCE AT DUKE HOSPITAL. CLAUDE R. NICHOLS and MORTON D. BOGDONOFF. (Dept. of Psychiatry and Medicine, Duke University Medical Center, Durhan, N.C.)

The recent interest in creating teaching programs which coordinate and combine the skills of several disciplines into programs designed to impart a comprehensive view of clinical problems has been extended to the development of a test clinic in the general Medical Clinic of Duke Hospital. The test clinic has been termed the Health Team Clinic and is directed to activating several disciplines into a functioning unit which might serve as a comparison model for the rest of the general Medical Clinic activity. The participating members include internist, psychiatrist, surgeon, nurse, physical therapist, and dietician. The assessment of its activity in relation to other areas of the out-patient department has been based upon physician referral, house staff participation, consistency of patient attendance, and senior staff interest in replicating the Health Team unit in other areas of the hospital. The impact of such a functioning unit upon the interest and practice of the training physician warrants analysis and review.

TEACHING WITH PAYING PATIENTS—A 30-YEAR EXPERIENCE. ROBERT G. PAGE and WRIGHT ADAMS. (Dept. of Medicine, University of Chicago, Chicago, Ill.)

Today, many medical educators complain about the problem of the decreasing number of patients who are available for teaching. The trend toward more universal medical insurance has decreased the number of charity patients. Because of this the private paying patient will play an increasingly important role in the education of medical students, interns, and residents.

Since 1927 the University of Chicago has carried on an active program in teaching and research using patients who pay for their medical care. During the years when the University was planning its clinical

facilities, a privately operated, charity hospital was proposed. Under the necessity imposed by the financial depression of that day, this concept was replaced by the group practice which is now in existence. This carried with it the implication of using private patients for teaching and research. It is the purpose of this report to present a summary of the 33 years of successful experience with this plan.

The program will be examined from the viewpoints of the patient, the student, and the attending physician.

All patients admitted to the University of Chicago Clinics either as in- or outpatients are potentially available for both teaching and research. Most patients enjoy their contacts with the medical students. It is not unusual to see the junior extern become the confidant of the inpatient just as they do on the charity wards of other hospitals. These patients also take part in clinical research activities and are usually more understanding and cooperative than charity patients. Only rarely does a patient complain about the number of times he has to be examined. This is usually resolved by the tact of the resident staff. Many patients recognize that the active teaching program results in better medical care.

From the point of view of the medical students, the interns, and the residents this system works extremely well. The patients are of the type with which physicians will deal when in practice. The student, at all levels, is able to obtain a more realistic view of his future than would be possible if he were restricted to indigent patients in his learning years. We have had no real problem in supplying enough "training material" and appropriate responsibility for either medical students, interns, or residents.

The staff is convinced that the enthusiastic work and the curiosity of the learners increases the quality of medical care for the patients. In general, the type of patients which this plan attracts makes better teaching material. The income derived from the patients makes it easier to provide an optimum amount of supervision at all levels of learning.

Thirty years ago, when this was an experiment and when plenty of indigent patients were available, we felt that the use of paying patients favored better teaching and clinical research. We still think so.

TEACHING OF MULTIDISCIPLINARY APPROACH TO REHABILITATION OF THE CHRONICALLY ILL.

AUBREY D. RICHARDSON. (Dept. of Preventive Medicine and Rehabilitation, University of Maryland School of Medicine, Baltimore, Md.)

The rapid increase in the number of patients with chronic diseases requires further orientation of the student toward rehabilitation and comprehensive medical care. The University of Maryland School of Medicine has recently established a special clinic for comprehensive rehabilitation planning which is being used to an increasing degree in the teaching program.

Patients seen in the evaluation clinic receive all the necessary medical consultation, including routine psychiatric, and medical, social, and vocational evaluation. The weekly group conference on these patients serves as a teaching vehicle and points out to the students the community resources available and how their services are coordinated in rehabilitation planning. Routine psychiatric evaluation of the chronically ill serving as a new and interesting teaching technique (requiring special skill) and providing the most dependable index to motivation. Social situations frequently need altering before a realistic approach to rehabilitation is feasible. Provisions for restorative and adequate maintenance therapy must frequently be made.

A community service is provided in the acceptance of all patients referred by physicians, hospitals, agencies, and others when there is apparent need for evaluation relative to maximum rehabilitation potential. Both community agency and practicing physician are taught in the multi-discipli-

nary technique. The inadequacy of community resources is pointed out, and a stimulus is provided for correction of these needs. Departments of Vocational Rehabilitation are provided with the techniques of providing services where they were formerly considered unfeasible. Special problems requiring study are arising which when investigated will provide additional information relative to correction of new and increasing problems of concern to the medical profession. In addition to student instruction in functional medical evaluation, there is the wider appreciation of the total problems of increasing numbers of people and the community's efforts to meet these needs. The method meets with considerable approval and increasing popularity. An initial goal of 200 evaluations is nearing completion and in the process of analysis.

AN INTERPROFESSIONAL SEMINAR AT THE UNIVERSITY OF PITTSBURGH. C. H. WILLIAM RUHE and PAUL L. MCLAIN. (Dept. of Physiology and Pharmacology, University of Pittsburgh School of Medicine, Pittsburgh, Pa.)

The health care of the community has become a problem requiring teamwork among various professional disciplines; it is therefore important for future physicians to meet students from other professional areas and to discuss matters of mutual concern with them. Realization of these facts led to the establishment 6 years ago of an interprofessional seminar at the University of Pittsburgh. Chief participants have been senior students from the schools of law, medicine, and graduate social work, with occasional individuals from other graduate areas. A typical seminar group includes six senior students from each of the schools of law, medicine, and social work, with one faculty member from each school and one from the department of philosophy. The group holds weekly, 1½-hour sessions for one semester. The most popular format has been one in which a topic is chosen in advance and is introduced by one of the students, usually through a specific case or incident which has attracted public notice and excited controversy. The balance of the time is then spent in open discussion. Faculty members are present to serve as sources of information and to direct the discussion into particularly fruitful areas. Some of the favorite subjects have been: "professional codes of ethics," "the professional man's position in the community," "narcotics," "criminal responsibility," "euthanasia, abortion, and artificial insemination," "world population problems," "the individual and the social good," and "human life as the greatest value." The benefits of the seminars have come chiefly from a broadening of the understanding of the students about important matters which relate both to medicine and to other professional fields. Changes in the attitudes and comprehension of the students are usually clearly evident as the discussions proceed through the year.

A BEDSIDE APPROACH TO THE STUDY OF MEDICAL COSTS. WILLIAM A. SODEMAN and JOHN A. NELSON. (The Jefferson Medical College and Hospital, Philadelphia, Pa.)

The medical student educational program concerning patient charges and costs of utilization of ancillary services for inpatients was instituted on the wards of The Jefferson Medical College Hospital, not only to acquaint students with the costs of patient care but also to stimulate them to consider, through realization of charges, the need for the procedure or service under discussion. Charge manuals and charge sheets were supplied for their use. Patients were chosen at random to reduce the burden of the study and the monotony of repetitious calculations. Records were kept for the complete period of hospitalization of each patient studied. In group presentations of these patients, costs were brought out. Need for a procedure or test was discussed and its true indication established through at-

tempts to lower the financial burden. Adequacy of simpler screening procedures in place of complex technics was spotlighted. Choice of the sequence of studies and technics to combine procedures came under consideration as they affected length of hospital stay. Ward discussions of varying suggested studies to determine the best procedure replaced independent promiscuous ordering by various residents and attending physicians. Real benefits in evaluation of indications for and selection of alternative procedures resulted. Resident participation extended these benefits to the House Staff, and to the Attending Staff as well. Specific examples of the program will be presented.

A VARIATION IN THE USE AND TECHNIQUE OF FINAL EXAMINATIONS. EDWARD A. TYLER. (Dept. of Psychiatry, Indiana University Medical Center, Indianapolis, Ind.)

For 5 years the author has designed the final examination as a guide for study rather than as a measure of minute differences between students.

This "guide" is distributed at first class meeting and due at last class meeting.

The questions indicate how the student should study and what he should expect to learn. The 1959 version, shown below, focuses the student's attention on the value of (*a*) lecture attendance, (*b*) correlation of his curriculum, (*c*) text and journal reading, and (*d*) some sample abstractions he should understand.

Psychopathology Examination 1959

I. There were 24 class periods in this course—how many did you attend?
II. Why do you feel this course was included in your curriculum? (One page or less)
III. List texts or articles (with approximate number of pages) read in preparation for this course.
IV. Answer one of the following (less than two pages):
    1) Discuss the role of anxiety in development of psychiatric symptoms.
    2) The interrelationship of human physiology and psychology is such that it is difficult to understand one without knowledge of the other—discuss.
    3) A child who is doing well in school and has never been scolded by the teacher develops a school phobia—discuss.
    4) Distinguish between a compulsive neurosis and a compulsive character disorder.
    5) Depression is a very common complication of physical disease—discuss.
    6) Contrast and/or compare neurotic, psychotic, and "normal" responses to stress.
    7) Some "normal" biological phenomena "such as puberty, pregnancy, menopause, old age, etc.) may be psychological stresses—discuss one.
    8) Some "normal" sociological phenomena such as attending school, dating, marrying, working, etc.) may be psychological stresses—discuss one.
    9) Physicians and their patients have feelings about each other—discuss the role of communication in these.
    10) Make up a question of your own, list and answer it.

Focusing on grading, course content, student interest, and class size and sophistication, the author will discuss why he feels the assets outweigh limitations.

A PLAN FOR THE TEACHING OF SYPHILIS CONTROL IN A MEDICAL SCHOOL AND UNIVERSITY HOSPITAL. BRUCE WEBSTER and GEORGE READER. (Dept. of Medicine, Cornell University Medical College, New York, N.Y.)

Ten years ago the teaching of syphilis control was well established in a majority of our medical schools. Today, it occupies little or no time in the curricula of these same schools. At the same time, it is generally conceded that the practicing physician is the keynote of syphilis control today. Treatment methods have become so simplified that special clinics are no longer necessary, and the majority of cases of syphilis of all types are under the control of the practicing physicians of this country. It would seem,

therefore, more important at this time, than ever before, to equip our outgoing medical students and residents with a working knowledge of syphilis control and perhaps, what is more important, an awareness of the disease as a medical and public health problem.

Why has syphilis control ceased to be taught in the majority of our schools? The two reasons generally given are: (*a*) the feeling on the part of many department heads that it is no longer a problem and (*b*) the lack of clinical material. With the assistance of the Venereal Disease Branch of the U.S. Public Health Service, a demonstration project was instituted at Cornell University Medical College and the New York Hospital approximately 2 years ago in an attempt to devise methods whereby outgoing medical students and residents would be able to cope with this problem of syphilis control which they will meet inevitably when they enter the practice of medicine.

The recently established Advisory Committee on Venereal Disease Control to the Surgeon General, United States Public Health Service, recommended "that teaching grants be provided to stimulate the teaching of syphilis control in medical schools."

The clinical material necessary for the demonstration project at Cornell University Medical College was found through the mechanism of serologic screening of all outpatients and in-patients admitted to the New York Hospital. Positive laboratory reports were screened through a central clearing agency and the resulting cases used for the study. During a 1-year period approximately 200 cases were utilized. These were referred to the General Medical Clinic and assigned to fourth-year students. As a part of this demonstration project, an instructor with a special interest in syphilis was available as a consultant to this student. Cases requiring long-term follow-up were referred to a special syphilis study group which was available for elective teaching.

Based on all of this clinical material, seminars were held for the entire fourth-year class assigned to medicine at that time. These are attended by assistant residents and junior physicians.

As a result of this project, it would seem that there is an increased interest in syphilis control on the part of junior physicians who are responsible for the teaching of students. There is better clinical handling of the cases in which syphilis is a problem. There has been an awakening of interest in the students. Requests for consultation have increased. As compared with those who were not exposed to this teaching, these students on a final examination made almost twice as good a showing as a control group which had not had this experience.

Statistics are available on the type of case material found by this method and the way in which it was utilized for student teaching.

TREATMENT-TEACHING RELATIONSHIPS IN PSYCHIATRIC TRAINING.

HERBERT S. WEINSHANK and FLOYD S. CORNELISON, JR. (University of Oklahoma Medical Center, Oklahoma City, Okla.)

In the course of treating patients the psychiatric resident finds himself in a new and complex situation. Since there are such great differences in the life experiences, precipitating events, and personality characteristics of persons with emotional problems, treatment must follow a course based on the patient's individual psychopathology. Supervision thus becomes important, not only to the treatment of the patient, but as a learning process for both the resident and the supervisor. This paper, which includes a case presentation, deals with some of the relationships in an effective treatment-teaching program.

A 30-year-old man was admitted to the psychiatric service of a general hospital with complaints of fatigue, headaches, and depression. His illness had begun 1 year previously after his 3-year-old son had died with leukemia. The patient had thoughts of suicide which were substantiated in a note

found in his clothing. During hospitalization the man did not appear to be acutely depressed at any time. It was only during the interview sessions that evidence of psychopathology could be noted. After 3 months in the hospital the patient felt that he was ready to return home and go back to his job. It was at this point in treatment that the supervisor, for the first time, strongly suggested that hospitalization be continued. An interview between the patient, his wife, the social worker, and the therapist was arranged, and the patient was persuaded to stay. After 4 months the resident made the decision to discharge the patient and to see him as an out-patient. During supervised psychotherapy the patient's needs to assert himself were discussed, and criteria were established for the termination of treatment.

In teaching psychotherapy in a residency program two factors seem to be important: (*a*) supervision which does not monopolize therapy and (*b*) treatment which does not depend for the most part on supervision.

THE *COMPLEAT PHYSICIAN* IN A CHANGING WORLD. MORRIS WEINSTEIN and FREDERICK D. MCCANDLESS. (Depts. of Psychology and Psychiatry, Albany Medical College, Albany, N.Y.)

Despite the increasing complexity of medical technology certain factors remain fairly constant insofar as the needs of patients are concerned. These factors involve the emotional aspects of the doctor-patient relationship. Whereas increasing specialization undoubtedly influences the physician's concept of his role, this need not result in increased interpersonal distance between the physician and his patient. It is assumed that a scientific consideration of emotional factors can be developed as part of the operational level of the practicing physician. The welding of technical competence with a preceptive management of these ever-intrusive human problems characterizes the *compleat physician.*

This study is an investigation of the growth and development of medical students encompassing two major factors in the operational role of physicians: (*a*) the degree of empathic communication and (*b*) the physician's role concept. Students in a comprehensive care program were observed through projective techniques and through assessment of their changing operational roles. Many showed an increase in the capacity for empathic communication and developed a comprehensive concept of the physician's role to include responsibility for recognition of social and emotional factors in illness, as well as for the care of system disease. The degree of empathic communication and comprehensiveness of role were considered the *operational level.*

Students who functioned at the high operational level of the *compleat physician* not only developed sound relations with their patients but also were more effective in providing medical care at a high level of competence. This resulted in appreciably less anxiety for the student in his relationships with patients and in greater satisfaction for both the student and the patient.

This study suggests that both a comprehensive approach to patient care and an increase in the capacity for empathic communication with patients can be stimulated in medical students. Important areas in the development of an effective teaching program are discussed.

THE REFERRAL PROCESS IN MEDICAL CARE AND THE UNIVERSITY CLINIC'S ROLE. T. FRANKLIN WILLIAMS, KERR L. WHITE, W. L. FLEMING, and BERNARD G. GREENBERG. (Dept. of Preventive Medicine and Medicine, School of Medicine, and Dept. of Biostatistics, School of Public Health, University of North Carolina, Chapel Hill, N.C.)

Proper use of consultation and referral of patients is an increasingly important ingredient of good medical care. There have been no previous studies of qualitative aspects of referral. The scant quantitative data available indicate that 5–30 per cent of

general practitioners' patients are referred annually. A teaching clinic like the General Clinic of North Carolina Memorial Hospital, which serves almost entirely as a referral center, affords an unusual opportunity for (*a*) helping students learn the proper role and use of consultants, and (*b*) studying the referral process, including the roles of physicians and "third parties" in medical care, and both of these have been undertaken. In this Clinic almost all patients are worked up by fourth-year medical students with individual preceptors.

With respect to (*a*) above, the student is given responsibility as the patient's primary physician; he learns to consider himself a consultant to the referring physician, to keep him informed, and ultimately to return the patient to his continuing care. He also learns to use specialist-consultants properly himself within the Clinic.

With respect to (*b*), the first step has been a study of reasons for referral to this Clinic and of problems of communication. Representative samples of physicians in the referral area and patients referred have been interviewed. Results show: (*a*) Among referrals nominally initiated by physicians, approximately 50 per cent are actually initiated primarily by patients. (*b*) Among truly physician-initiated referrals, in only half did physicians have specific reasons for desiring referral. Although specialists thought they were more specific than general practitioners, in actuality there was little difference. (*c*) No medical information was sent by referring physicians in 60 per cent of referrals. (*d*) Despite emphasis on return of patients to referring physicians, over half the time patients had not returned within 2 months after Clinic work-up was completed; this finding has led to study of ways to improve the rate of return in which students play an important role.

CLASS EXERCISE IN TEACHING OF 4TH-YEAR UROLOGY.

HANS H. ZINSSER. (Dept. of Clinical Urology, Columbia Univ., College of Physicians and Surgeons, New York, N.Y.)

In the teaching of a 4th-year urology course where grade incentive is virtually meaningless and where ready access to clinical material has been complicated by the lack of third-year teaching time, a quiz-type class exercise has been devised to supplement didactic material which has been found to have unexpected advantages.

In a school where primary emphasis has been on the rigorous collection of historical and physical examination data the students are found to have a rather rigid approach to a clinical problem which makes their transition to the internship and to emergency ward treatment difficult. By teaming students in pairs, and giving them rigid time limits to achieve diagnosis in straightforward urological conditions, considerable skill in reaching the correct diagnosis can be developed which has application in fields other than urology, and provides a sound basis for large hospital, rapid patient turnover practice, which these men will encounter shortly after they leave the confines of a medical school environment. Details and a list of examples will be given.

MEDICAL EDUCATION FORUM

Editorials

APPLICANTS FOR MEDICAL TRAINING

It may be wise for us who are concerned about medical education to realize that circumstances are changing rapidly. The medical profession is by no means as glamorous as it was a few decades ago. Further, there is a strong appeal for many other professional interests associated with the over-all health effort which are attracting able youngsters. Again, college students who become interested in scientific affairs are being increasingly stimulated to consider the rewards of careers in the exact sciences or in applied technology: our electronic age is offering high rewards to those who are capable of contributing to it.

Medical schools generally are finding a slow decline in the number of well qualified applicants. Many complex factors are involved, and these deserve careful study and evaluation. Meanwhile, we have to meet the problem in as prompt and as practical as way as possible. Dr. George H. Whipple, out of his long experience and wisdom, offers suggestions which are chiefly directed toward increasing the financial stability which medical students must have (*J. M. Educ.*, **35**:550, 1960). These suggestions range from increasing scholarships and loan funds to reductions in medical schools fees. Interestingly, Dean Whipple proposes also, by implication, that superior medical students may do part-time work on a graduate school basis, and thus earn sufficient money to keep them comfortable during their medical school training.

These suggestions are appropriate. Yet they do not go far enough. If we are going to have the responsible and well trained physicians that we will need for our rapidly increasing population, we must move rapidly and to the point. State medical schools should consider seriously the proposition whether or not their respective states should subsidize medical students with direct scholarship grants. These should be sufficient to take care of the costs of living and the costs of medical training. Funds for the costs of living need not be furnished to those medical students who really can afford it, but they should be ample for those who cannot. It is possible that private medical schools will have to seek aid in the same general way from the federal government. This will call for a unified program, so that it may be equally applicable to all medical schools.

The monetary inducement for bringing better students into medical schools is not enough. There must be some kind of general study of the status of the medical profession, particularly in relation to the other health professions, and to other forms of health careers. This calls for coordinated effort among the various health professions and among the various schools which are concerned with the various health professions. There are vast changes now in public attitudes with regard to health matters over what were prevalent up to a few decades ago.

It is high time that the medical profession took account of these changing public atti-

tudes. These changing public attitudes with respect to the problems of health are only part of the general change in public values, which affect many of our conventional standards and ideals. These are reflected in the ways by which individuals react with respect to the personal satisfactions to be derived from professional service. If medical schools are to continue to attract able and well qualified students, they will have to adjust with ever sharpening wisdom to the needs and demands of the people of our country. It is time again for evaluation of our purposes and of the best ways by which our goals may be reached.

CHAUNCEY D. LEAKE

The Ohio State University
Columbus 10, Ohio

THE THOUGHTFUL PEDIATRICIANS

Academic pediatricians have been among the leaders in encouraging a continual sifting and winnowing of medical education in line with changing times. They have played important roles in the educational studies of the A.A.M.C. The American Academy of Pediatrics has sponsored a number of regional and national conferences on pediatric education. The annual meeting of the Society for Pediatric Research includes a session on the teaching of Pediatrics. Now a committee from the several national pediatric organizations will undertake a study of pediatrics—present and future.

"New occasions teach new duties," and pediatrics has perhaps been jolted more severely by medical progress than any other field. Or at least the pediatricians have been sufficiently thoughtful to be keenly aware of the change which swirls throughout medicine today.

Pediatricians are also concerned about the dwindling number of applicants for House Officerships in their field. The soaring popularity of other specialties has had an impact on Pediatrics. So too have the reports listing average incomes in various specialties, with Pediatrics trailing the field.

In this issue of the *Journal* we are publishing an article on the educational aspects of the New Pediatrics.

How pleasant to contemplate a discipline which is courageously taking stock. Other fields might well follow suit.

We shall await with keen anticipation the report from the study of Pediatrics.

JOHN Z. BOWERS

Datagrams*

APPLICATION ACTIVITY FOR THE ACADEMIC YEAR 1959-60

For the third consecutive year the number of individuals applying to United States medical schools has decreased. The total number of applicants to the 1959–60 class was 6 per cent less than the total number applying in 1956–57. The total number of applications exhibited a similar decrease, but the over-all number of acceptances increased slightly (up 3 per cent over 1956–57), thereby accentuating the significance of the trend. Table 1 presents the data for this year and for the previous twelve years.

Although undergraduate college enrolments continue to increase, United States medical schools have experienced two peaks in application activity since World War II. Figure 1 graphically presents the trend in application activity in relation to the number of students engaged in higher education under the auspices of the G.I. Bill and in relation to the total number of Bachelors and first professional degrees conferred in any given year. The similar

TABLE 1

SUMMARY OF APPLICATION ACTIVITY DURING THE PAST THIRTEEN YEARS

First-Year Class	Applicants	Applications		Accepted Applicants	First-Level Degrees Granted (Men Only)	Students under G.I. Bill
		Total	Per Individual			
1945–46	.....	.....	.....	.....	58,945	87,805
1946–47	.....	.....	.....	.....	110,500	1,012,400
1947–48	18,829	56,279	3.0	6,512	176,146	1,149,941
1948–49	24,242	81,662	3.4	6,973	264,222	974,945
1949–50	24,434	88,244	3.6	7,150	329,819	843,677
1950–51	22,279	81,931	3.7	7,254	279,343	580,597
1951–52	19,920	70,678	3.5	7,663	227,029	396,186
1952–53	16,763	56,319	3.4	7,778	200,820	266,650
1953–54	14,678	48,586	3.3	7,756	187,500	280,264
1954–55	14,538	47,568	3.3	7,878	183,602	364,645
1955–56	14,937	54,161	3.6	7,969	199,571	450,880
1956–57	15,917	59,798	3.8	8,263	222,738	474,657
1957–58	15,791	60,951	3.9	8,302	242,948	446,348
1958–59	15,170	59,102	3.9	8,366	257,000	380,271
1959–60	14,951	57,890	3.9	8,510	.....	.....

shapes of the applicant and G.I. Bill curves are of interest when one considers the possible role that available funds might play in decisions to do advanced work beyond the A.B. degree. A recent survey of the 1959 senior class by the AAMC's Division of Operational Studies indicated that at that time veterans' benefits accounted over all for only about 4 per cent of medical students' income. This information is consistent with the obvious correlation between the number of veterans in training and the degree of applicant activity.

As the National Defense Education Act of 1958 becomes increasingly implemented, it is conceivable that it will fill the economic void left by the retirement of the G.I. Bill and that a corollary increase in applicant activity will ensue. At least two factors militate against this possibility. First, moneys available under this act are in the form of loans which may make them less attractive to the student who contemplates extending his academic career than was the outright grant under veterans' training. This might be especially true if the student has already burdened himself financially during the period of his undergraduate education. Second, these funds are matching funds requiring an outlay on the part of the medical college which in many cases cannot be realistically met in any

* Submitted by the Basic Research Division of the A.A.M.C., 2530 Ridge Ave., Evanston, Illinois. Source of information will be furnished on request.

large amount. The AAMC Teaching Institute report on *The Ecology of the Medical Student* indicated, for example, that 40 per cent of all United States medical schools could not, at that time, fulfil their students' needs for educational loans.

Any search for explanatory factors relevant to future predictions of applicant activity should not be limited to immediate past experience. For the most part, the past twenty years represent an unstable base for future projections. We might consider, for example,

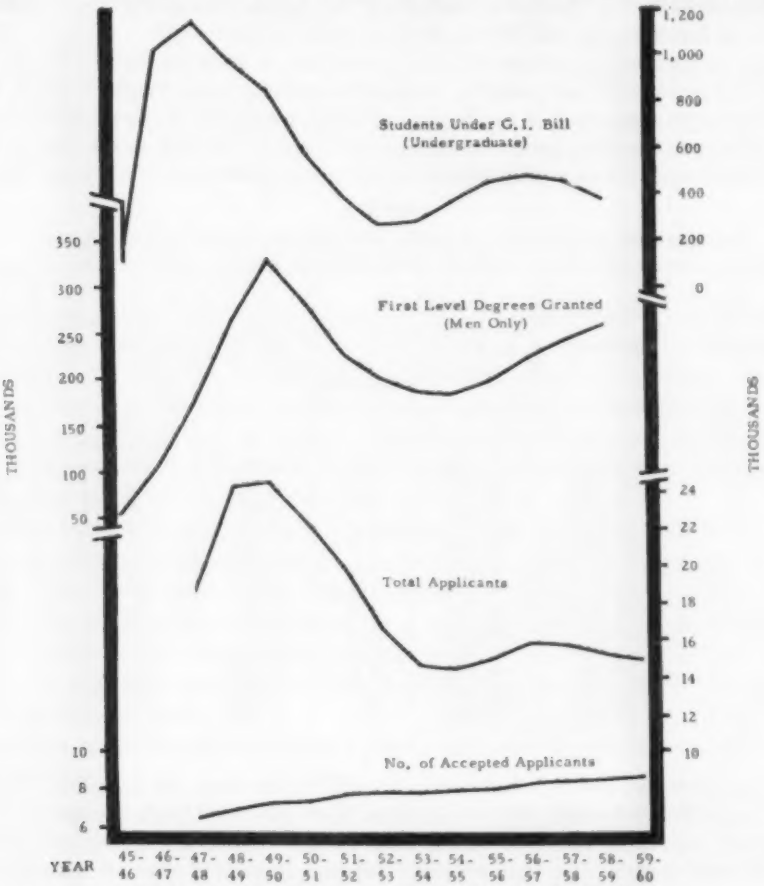

FIG. 1 APPLICATION ACTIVITY IN RELATION TO VETERANS IN TRAINING AND FIRST LEVEL DEGREES.

that for years medicine, law, and the clergy constituted the intellectual community. Now, as Potthoff points out in his recent *Journal of Medical Education* article, "wider and wider ranges of vocational opportunities in professional, technical, and scientific fields have opened up over the years and will open up in the future to men who possess a baccalaureate degree. As a consequence, decreasing proportions will have an interest in medicine." The 1959–60 "Study of Applicants" now in preparation for the *Journal of Medical Education* will present a more complete discussion of the interrelations of these long- and short-range trends along with additional relevant data.

Finally, a reduced number of applicants is not serious if, and only if, the *quality* and the *variety* of the talent in the *accepted* applicant group are maintained and improved upon. Next month's "Datagram" will explore the relation of applicant quality to the trends discussed above.

Report

TOWARD WHOLENESS: MEDICAL EDUCATION AND THE NEW NATIONS*

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University of the Philippines College of Medicine

I have been asked to speak to you on the role of pathology in the medical development of the new nations. Knowing that your primary concern is *method*, I will emphasize those experiences in medical education overseas and in science which have furnished me with some of the principles required by all our disciplines in technically underdeveloped areas. The first group of experiences might be termed "making bricks"; and those dealt with in the next discussion are "spreading mortar."

All of us who have worked in building new structures have a common experience which may be classified either as making bricks or as applying mortar. One phase of the work is the local effort, "the bricks," of developing something tangible—a laboratory, a department, an institution, or an agency. The other part of the work is the administrative integration, "the mortar," the fitting in of our brick with the whole. At times, I am sure, each of us is guilty of assuming the entire structure to be ourselves, whether mortar or brick, or of being competitive with the other essential components in it.

In my own experience as a pathologist and teacher, I have found these phases to be progressive and think of them as the "professional ages." There are the childhood years of professional life when we are making bricks, our first major assignment as professor or chief of some unit when we look with pride on a handiwork which is our own. Next comes the teen-age phase when the gang instinct diverts us from the local institutions, and we become aware of other professional units. Then, depending on our compulsions, we find ourselves organizing new societies, participating in projects of doubtful significance, or attending conferences of all conceivable varieties. Eventually this era of need for psychologic identification with the inner wheels of a group gives way to adult life when we return to our first love, content, like Candide, to cultivate our own gardens but having realized the wholeness of each part and the ultimate necessity of each part to the whole.

The bricks.—It is necessary to describe only briefly my experiences in China and in the Philippines. You are all familiar enough with the tedium of building up a new work. The two experiences were particularly instructive in that they spanned two cultures within a decade of rapid world-change, and in each instance the sponsoring organization was different —in China, world missions; and in the Philippines, a private foundation. However, the most basic lesson was that each situation in time and geography is different. While principles remain stationary, methods must vary.

In 1948, I flew to Tsinan, Shantung, to join the staff of Cheeloo University Medical School as head of the almost nonexistent pathology department. The students had just

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trekked back from West China, and the soldiers of the Communist Revolution were already in the environs of the city. Railways and roads had been cut off, and access was only by air. Each evening we heard the guns in the hills, and our clinicians daily attended the wounded brought to the hospital.

There was constant tension, an almost schizophrenic existence. We were re-establishing a medical school with high standards, yet we were constantly talking about the necessity for another evacuation. Crisis was routine to Old China Hands, but I was not used to contemplation on the edge of a volcano. Furthermore, there were no "ancestors" in medicine

FIG. 1.—South China: Endemic schistosomiasis causing splenomegaly and stunting of growth in a young boy.

to will us a heritage of established systems, and no technically developed society out of which equipment could be ordered or into which gadgets could be plugged. The opportunity for specialized work had to be forged out of a completely raw environment. Despite all of this, I soon discovered that there was much to learn.

The first reaction of a medical specialist in a new culture is one of astonishment at the different diseases, or manifestations of diseases new to him (Fig. 1). I wondered at the large, advanced tumors in which unusual histologic variations appeared, possibly due to differences in nutrition or in susceptibility of the patient, as well as to the size and changing vascularity of the tumor itself. Tumors showed themselves in unconventional locations; and the lack of early therapy, or means for complicated surgery, resulted in clinical manifestations which were also new. These were routine to the older practitioners of the area,

who by now had found therapeutic adaptations which at times seemed just short of miraculous.

Being attracted by granulomatous and infectious diseases, I viewed with great interest the young tuberculous men with large matted lymph nodes in the neck and axilla resembling patients with Hodgkin's disease. The histologic picture of tuberculosis was also different from what I had seen either in Negroes or in white Americans. At times the autopsy lesion was almost suppurative, as in experimental animals, the tissues teeming with organisms.

The results of poor nutrition in children and adults of a war-torn country were constant hazards to the surgeon. I learned very early that nutritional diseases were not specific lesions, as in experimental animals, but that the underfed tissue was in general so poorly resistant that it succumbed rapidly to infections and trauma. I felt that the protein levels must be of fundamental importance in the maintenance of adequate tissue response. One

FIG. 2.—Tsinan, Shantung, China, 1948: Noma in a malnourished infant following measles.

little child with noma was left on the steps of the hospital by its family retreating from Communist soldiers. Half of her cheek had rotted away; yet it healed quickly with penicillin (Fig. 2).

Within weeks it was obvious that one of the first needs in teaching, still unmet, was for textbooks which were suited to the material which the students were studying, and to the environment in which they would practice. Of what use are chapters devoted to carcinoma *in situ* while typhoid fever is described by inadequate paragraphs?

Efforts at nomenclature, not based on diseases as seen in different cultures, are of only limited use. With some self-consciousness, I realized that I had been guilty of generalizations for the entire human race as a result of a rather provincial experience with one small segment of it in the eastern United States.

When the Communists were about to take our city, we left a contingent to maintain the hospital for the community and evacuated the medical school to Foochow, Fukien, 1200 miles south. Chennault's air line flew students and cadavers to the coastal city of Tsingtao, while some of us went ahead to Shanghai to mobilize launches and the 300 tons of equipment which had been stored there (Fig. 3).

These were the days of UNRRA, and as I inventoried this equipment, I had my first glimpse of misapplied "mortar." There was enough magnesium sulfate to move the intestines of all of China, were this remotely necessary. I learned that mismated evening sandals had been unloaded by one American shoe manufacturer on the rural people of Mid-China's rocky lanes and rough fields. It was my first insight into the fact that my fellow citizens were of mixed motivation and that our own officials were at times arbitrary. Yet, with all the mistakes, some help still reached people who needed it. But I was glad to be making bricks.

We resettled our medical school around three teaching hospitals on the luxuriant shores of the Min River and unpacked the cadavers, most of which were reluctant Nationalist soldiers collected by our professor of anatomy at the hour of their execution.

Before I came to China, I had stiffly resolved to teach nothing but pathology; but after the adventure of helping to move an entire medical school, I felt fortunate to be teaching

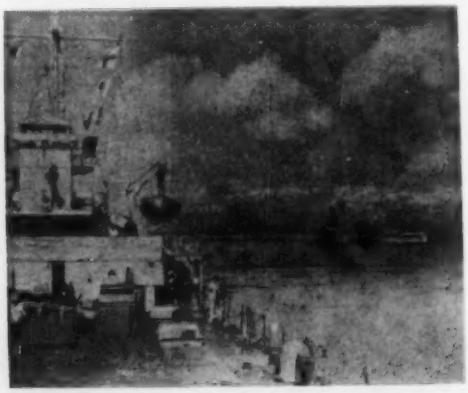

FIG. 3.—Tsingtao, Tsinan, China: Evacuating the Medical School.

anything. So I became histology professor and chief embalmer of bodies for anatomy. Soon we were building shelves, tables, chairs, and blackboards. We scrubbed floors, and worked night and day reorganizing the hospitals into teaching units. Our clinical conferences were held in an open pavilion which left us exposed to the assaults of pigeons and other uninvited guests. Autopsies were often performed while families and mourners wailed and beat against the locked doors of the morgue.

From this came the knowledge that one's own hands, strong heart, and mind are the main assets out of which good medicine grows. Fancy equipment and elaborate buildings are incidental and indeed even useless unless students are being taught at the bedside by professors whose direct example applies the highest ethic of our discipline.

As our department grew, we extended pathology consultation service to four provinces of South China and thus obtained documentation of diseases which not only enriched our experience but gave us a reservoir of teaching material to supplement and to compare with the 100 autopsies brought in pickle barrels from Duke University (Fig. 4). Thus, as our *service* progressed in quality, our *science* was born.

But just as I was becoming proud of the developing importance of pathology, my per-

spective was sharply restored by a doctor up the river whose example taught me the real meaning of the term "public health." This clinician had temporarily closed his hospital and had gone out to shoot a "man-eating tiger" which had reportedly taken 300 lives.

He said, as he took his gun, "That tiger kills more people than I save." One week later having killed the public health menace, he reopened the hospital and resumed his customary work.

I marveled at the doctor's practical realism, for he was not limited by a specialist's view of his mission. He knew why he was there—*people*. So I, too, had to face the fact that professors did not exist for ivory towers, nor did specialties exist for their practitioners. Having come from an environment where academic medicine was considered the highest calling, I

FIG. 4.—Foochow, Fukien: Students unpacking "spare parts" from Duke University.

now saw that this was an allowable luxury only because the American people *had* doctors. (Similarly, a new caste of "basic scientists" has risen in this decade, and professors at last know how a "general practitioner" felt in our student days!)

The first graduation of doctors in the new environment was a proud moment for all of us. *Their hands* would serve their people because *our hands* had served them.

Meanwhile, having taken all of China north of us, the Communists were again approaching, and each day brought thousands of barefooted, ragged soldiers wearily retreating through our streets.

Inasmuch as we had evacuated our students to a strange part of the country, our staff had planned to stay on with them under the Communists. At that time it was not known whether cooperation were possible; and with something of scientific objectivity we agreed that we should stay until we had tested the limitations of our freedom and plumbed our ability to practice medicine under the new regime. The department was now running smooth-

ly and a resident program had been instituted, so I took a vacation on Formosa for rest and recreation before the Communists came. But while I was away, there was a sudden flank movement of the Communists who took the city overnight and blew up the air strip, preventing my return. The medical school went on for several years until the faculty members, one by one, had to depart. The students continued to get education, and in the Chinese tradition, to adapt. We shall never forget them.

My second period of developmental work was in one of the new nations, the Philippines. I had gone as "Visiting Professor" to the Department of Pathology of the University of the Philippines. This time my salary was paid by the China Medical Board, originally incorporated with Rockefeller funds for the development of the Peking Union Medical College in China. It was soon apparent that one could be a "visitor" but not a "professor" until procedures were established and the department was functioning (Fig. 5).

This was radically different from the Asia I had known in China. By now our overseas

FIG. 5.—Philippines General Hospital, Manila. Service routines have to be well established before visiting professors can be utilized in teaching. As far as possible, equipment should be locally adapted, but standards of performance high.

aid programs had expanded, and I found a people dependent on American equipment, a 20th-century form of Shamanism. I could not help thinking back to our poverty-stricken students and our small budgets in China out of which a good medical school had been built. But I could not condemn the Filipino for thinking that these inadequacies were due to lack of equipment. The idea could have been induced from our own culture, for our political theme at that time was "impact," and the preceding era of colonial patronage had done little to develop their own resources.

I lived with a Filipino family who became my own. In my disappointment that the people did not realize their potential, I tended to judge too harshly; but through the perspective of "my family" I learned to understand and to forgive the factors involved.

I also learned that there is no East, and no West. Each nation and each local area has its own particular handicaps and assets. Whereas the average Filipino did not have the Chinese ability to work and to sacrifice, he nevertheless had a humility and eagerness which made him learn rapidly. Although the game of politics subverted almost every effort, there were still many assets:

1. The department was located within a large teaching hospital. It was not set apart, as in most Asian schools.

2. There were 1000 autopsies a year from the teaching hospital. These were not being properly studied but could be of great value to world medicine because they represented a race and environment different from ours in the West. Except in Hong Kong, autopsies were obtained with great difficulty in other Asian countries.

3. The system of education was patterned after our American schools, and so the local effort in the department could be easily integrated into the general medical framework.

4. There were assigned to us a group of sixteen young residents and instructors who had never had any pathology training and with whom one could start from scratch. They had nothing to unlearn.

5. Autopsies could be taught as a systematic procedure, and we could institute routinely the study of bone, skin, joint, and brain, so often forgotten in the autopsies being performed in America. The old-fashioned autopsy protocol could be changed in favor of one of more relevance to modern medicine (Fig. 6).

FIG. 6.—Philippines General Hospital. The autopsy forms the basis for clinical knowledge and scientific research. It can be scientifically performed without elaborate equipment.

6. It was possible to keep "special pathology" (eye pathology, gynecologic pathology, etc.) in the department. This sometimes required almost ruthless measures, because the professors of these clinical specialties had been trained in America where they had seen pathology service divided up into various departments. Naturally, they assumed that this was the best procedure, although we applied the Biblical injunction, "What God hath joined together, let no man put asunder." The stimulus of this challenge was healthy, for we had to produce prompt and good reports which correlated with the specialty.

7. The residents came for a minimum of 9 months and had to rotate on autopsies. Thus, they could obtain a general background for correlation. Specialty interest was satisfied by making each responsible for periodic analysis of the surgical and autopsy material relating to his clinical or research field. From this material, he initiated and managed clinicopathologic conferences with the departments concerned. Cases for teaching and research were derived from this systematized material.

8. With sometimes six autopsies a day we could begin at 8:00 A.M. with fresh material

removed by systems and with the appropriate clinicians present. The entire chart, not an abstract, was required; and if the body came to the autopsy table without the chart, the resident had orders to wheel it back to the ward! At these conferences, after discussion with clinicians, leads for further work-up were then given the residents, very much as in ward rounds. They began to see that the pathologic study was an extension of clinical study and was itself an investigative process capable of unfolding endlessly according to their own curiosity and within the limitations of our method. I, in turn, was rewarded by a new demonstration of the function of the autopsy in eliminating incorrect clinical practices. It was as if one had gone back in history to the early days of pathology.

9. In 1945 the museum had been looted by the townspeople when the hospital had been partly destroyed by American guns. So, we could start fresh, keeping the entire autopsy

FIG. 7.—University of the Philippines College of Medicine, Department of Pathology. Museum problems are cheaply solved by keeping complete autopsies in separate pots with duplicate protocols readily available. The student learns to discriminate between normal and abnormal, and to consider the patient as a whole, rather than as a "lesion." This exercise of independent judgment is particularly valuable for young people of Asia.

case with a duplicate protocol in pots we designed for local manufacture. This introduced the idea of the museum as a library of reference cases, rather than as a parade of lesions. It was simple, and it was within their means. The cases then formed the basis for the teaching of students, minimizing the use of textbooks or material borrowed from overseas (Fig. 7).

10. As in the Hopkins-Duke system, teaching could now be done around case material by the young doctors who sat informally with small groups of students. Their enthusiasm was unbounded. A library of books and special slide collections which we had created in the department began to be used at night, and tennis became of secondary importance. Five of these young people fell in love with pathology and have one by one come to the U.S.A. for further training. They now form the nucleus of the continuing work.

11. The local staff taught me a valuable innovation in curriculum planning. Pathology was divided into two main sections. The equivalent of the first half, as taught in the U.S.A., was given in the second year. With these basic principles, the student went into his third

and fourth years. The second half of pathology was taught in his last year. By now he knew its use, and he was eager for the morphologic relationships. He was well grounded in clinical data, and correlations were easily established. Teaching these mature students was a distinct joy, and it was such an effortless solution to the modern emphasis on "integrated teaching."

There were also interesting cultural patterns of the society which had to be overcome for the sake of the technical development they desired. Living with the Filipino family I was helped in my understanding of the people and of the factors which produced adult men who could not easily make decisions or take responsibility.

Of course, one could not change the entire family pattern. But, if work was to continue and grow, how necessary it was to develop leaders capable of initiative. This was as important as looking through a microscope. So we added "administration" to the training program. The department was divided into small units and each unit put in charge of one of the untrained instructors. Jointly we made plans and through processes of trial and error learned to correct plans and to implement them (Fig. 8).

FIG. 8.—University of the Philippines College of Medicine, Department of Pathology. Classification and well-kept records form the basis for scientific research. Administrative training should be included as part of the residency program in the New Nations.

The effectiveness of this taught me two principles of administration which I feel would partly eliminate the complications of "bigness" in huge institutions in the U.S.A.: (*a*) the workers should be grouped in relatively autonomous small units where total relationships between people can operate, and (*b*) the administrators should correlate between these cells directly rather than control through intermediaries "from above."

Another interesting problem was the low social caste of the technicians who were treated as servants. This distinction had to be eliminated. So, we placed a young doctor's wife as a student in the laboratory, and she subordinated herself to her technician teachers. In turn, she buffered them against the professional person who commandeered their time for running of errands. Gradually their prestige was raised.

The economics of private practice was also out of control. Professors expended most of their time and interest in part-time private practice, and they did not have the hours to give to the inexorable work of building up their departments. In pathology, high individual

fees were charged the patient so that pathology in effect was only for the rich. So, as a department we did "private pathology practice," after hours, at a monthly flat-rate, soliciting material from several small hospitals. From the proceeds a percentage went back into the budget of the department, and the rest was distributed among the secretaries and technicians to supplement their low salaries. Gradually the feeling of mutual partnership developed. We had hoped this would become a model to solve the problem of economics in Filipino medical education, but I am afraid it was only a gesture.

What I have described is the ideal we tried to institute and the principles we tried to modify. The results were far from perfection, but the foundations were laid. There has been maturation of some facets and a reversal of others. Many changes, particularly those not being practiced in America, were purchased at great cost of energy and understanding. But as the young members of the staff come to America, I share their pride when they discover that they have within their grasp at home all that is necessary for their own development. The rest is the process of time and the gradual adjustments of the entire society as the nation begins to form.

In summary, these attempts to make bricks have revealed certain principles of medical work in other cultures which probably apply to all specialties. These are:

1. Panels, committee meetings, and field trips cannot evolve right methods. No matter who we are or how highly trained, we are conditioned by our own culture. We see from a limited perspective.

2. Right methods can only be accomplished by a person having continuity with the problems at the local level. As taxing as this is, administration has to be delegated to the local workers, and *the ability to administer must be developed in close collaboration.* Finally, complete responsibility must be given. There can be no continuity of any program overseas without this long process. This requires equality and affinity of mind, as well as living in equilibrium with the people. It cannot be done in less than 2 years, and we must face the hard fact that any attempt at aid is mere dabbling without this intimate continuity of work.

3. In medicine, priorities must be built around service, with first emphasis on the improvement of the routines which help the patient in the hospital. These are fundamental. Only from these can good teaching develop. Textbooks and lectures are otherwise useless.

4. Research may not be begun until service and teaching have evolved around the human being. Whether "basic" or "clinical," research must grow out of the problems presented by the human patient and preferably should be done on concepts of local importance. The modern medical scientist must understand that thorough clinical and pathologic analysis are the beginning of research and that there is no such division as "service" or "science." Above all we should be careful not to transplant today's trends of "medical science" into a society to which they are unsuited. Who knows but what our attenuation of medical science into minute specialties might one day so fragment our thought that we ourselves will require the very wholeness being developed in the new nations?

If we adhere to these principles, disciplines *will* evolve and will perpetuate themselves without elaborate pump-priming. It may be illustrated by a small incident which occurred this past year.

I was reviewing cases of schistosomiasis from various parts of the world and was struck by the violence of the tissue reaction in those of our soldiers who had died with the disease on Leyte, as compared to the more chronic reaction of the Chinese and Filipinos. When I tracked down some of the missing "brain cases," I found that a paper was being written

on schistosomiasis of the brain by one of our institute pathologists. He was basing his concepts on material from the American soldiers on Leyte and had not studied examples from other races or areas. So we wrote to one of our former trainees in Manila, now Assistant Professor of Pathology, and found that they too were evaluating "schistosomiasis of the brain." But *their* concept was being derived from Filipino patients, and they were more aware than the American that there might be differences between the two groups. By now in Manila there had accumulated over 5000 autopsies which had been well performed and well analyzed. So a number of scientific studies had become possible, including this research on schistosomiasis of the brain. We received a very mature statement from the pathologist, and a beautiful description of the lesions, ideas concerning pathogenesis, and illustrative slides. These were indeed different from those being described by the American pathologist. Thus, on the foundations of service and teaching, research *had* developed in the Philippines, and the more accurate concept of the disease could be established. And in this process, the Filipino had become the benefactor to the American.

So, where does service stop and teaching begin? Or teaching stop and science begin? It is a whole; and only as a whole will there ever be growth and change of the individual parts, whether they be persons, nations, or worlds.

Addresses

EDUCATION OF A SURGEON*

OWEN H. WANGENSTEEN, M.D.
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For several years I have been hearing about the Fred Coller Day at Ann Arbor. Dr. Coller and his associates are making a unique contribution to American surgery in encouraging the performance of research of a high quality by young surgical aspirants in voluntary hospitals throughout the state of Michigan. This enterprise, if emulated in other parts of our country, as it should be, could come to have great meaning for the advance of surgery in our respective communities. Moreover, your program suggests very definitely, of course, that research is sponsored and fostered by the hospitals and staffs from which these young men come.

When an invitation came to have the opportunity of hearing the presentations of these young men, I was happy to accept, for I was anxious to observe and to learn how the Department of Surgery in the state of Michigan brought this worth-while enterprise into being. For me, therefore, it has been a real privilege to be here today and to have had the pleasure of hearing these nice presentations, a large number of which would have done great credit to any surgical forum.

I. TRADITIONS OF THE UNIVERSITY OF MICHIGAN MEDICAL SCHOOL

Long before the turn of the century, the faculty of the medical school at the University of Michigan already was one of the strongest and most distinguished in this country. Over a long period, Michigan has contributed richly to the faculties of other medical schools. In fact, it could be said, it has helped build their staffs. Franklin Mall, great anatomist who got his start here, went to Johns Hopkins and played a key role in the development of that institution, as did J. J. Abel, famous pharmacologist. The latter, in turn, was succeeded by Dr. A. R. Cushny, who subsequently returned to his native Edinburgh. William H. Howell, renowned physiologist of his day, attained his early scientific promise here and spent most of his professional life at Hopkins, following an intermediate short stay at Harvard. James P. McMurrich, fine anatomist, returned to his alma mater in Toronto, to be followed by George L. Streeter, who subsequently joined the Carnegie Institute in Baltimore. George Dock, distinguished internist of his day, did much of his best work here before leaving for Washington University in St. Louis. There are even additional names.

The marvel is that any faculty was left. However, like begets like, and a never ending wonder is the germination rate of true scholars in an atmosphere friendly to learning. It is, in fact, one of the real compensations and sources of comfort for the teacher. I see no occasion for mourning in a Staff or Faculty when a good man leaves to try his fortunes elsewhere, so long as the buoyancy of the Staff is not dependent upon that individual. It is the

* Presented May 26, 1960, at the Fred Coller Clinic Day, University of Michigan, Ann Arbor, Michigan.

function of a good teacher to make himself dispensable by rearing ready replacements. It is the departmental head who makes himself indispensable over whom deans and the faculty should be concerned.

Despite these inroads, which easily could have been the ruin of a faculty with a lesser capacity for reproduction, your faculty continued strong, and there developed in your midst men such as Carl Huber, Frederic G. Novy, A. S. Warthin, Carl Weller, and others.

Your Department of Surgery also has had an illustrious and representative group of surgeons, of which your medical school and its sons and daughters can be justly proud. Their names are familiar to all of us. There was the colorful and swaggering Moses Gunn, who subsequently joined the faculty of Rush Medical College in Chicago. Then Donald MacLean, pupil of Syme in Edinburgh, whose ardent and insistent support of removal of the medical school from Ann Arbor to Detroit ultimately resulted in his undoing. MacLean was followed by Charles de Nancrede, devoted and beloved teacher, whose tenure extended over many years; it was he who helped lay the foundations for what has come to be one of the strong Departments of Surgery in this country. Between Nancrede and Hugh Cabot came C. G. Darling, favorably known to all Michiganders of that era.

Your Hugh Cabot, who served both as Professor of Surgery and Dean, I came to know very well during his years at the Mayo Foundation, where he contributed a great deal to the upgrading of the teaching of surgical fellows in that institution. About 30 years ago, following an instructive and highly entertaining lecture, which Hugh Cabot had given at our University, he and I walked along the banks of the Mississippi toward my home on a warm late spring afternoon, such as this. Dr. Cabot fell to reminiscing, and I asked him what had persuaded him to leave the University of Michigan. Dr. Cabot looked carefully about, then whispered quite audibly in my ear: "Skunks." He did not elaborate, and I did not push the inquiry, for I am certain such an issue is always a delicate subject for discussion in any environment.

The strong Department of Surgery, with which all of you are familiar, I came to have some acquaintance with in the early thirties. My first visit took place when the American Thoracic Society met here in 1932. Your own distinguished and recently retired Professor of Surgery, Frederick A. Coller, was at the helm. There was a bustle of activity notable on every hand, and what a friendly atmosphere it was! Fred Coller was the first amongst surgeons to probe into the complicated problems of fluid and electrolyte therapy. His important work in this field served to provide many of us with our initial orientation in this confused and chaotic field. Here I first became acquainted with Henry Ransom and Walter Maddock. A very strong Division of Thoracic Surgery was much in evidence under the distinguished leadership of the late Dr. John Alexander, heroic figure in surgery, who bore his own physical infirmities with a patience which excites our unbounded admiration. Here it was too I came to know Cameron Haight, under whose direction your Division of Thoracic Surgery continues at a strong pace. Max Peet in neurosurgery was then a prominent figure on the national scene. Carl Badgley, still active in your Division of Orthopedics, was coming into his own. Dr. Reed Nesbit, eminent urologist of our day, was beginning to make his mark. No wonder the Department of Surgery at Ann Arbor under Fred Coller has continued its spreading influence over a period of more than 30 years in scenes far removed from here. The strength of your School of Surgeons which developed and flourished under Fred Coller will unquestionably maintain its vigor, tradition, and character under the able leadership of its present Director, Dr. C. Gardner Child.

Here, too, I came to know Fred Hodges, keen exponent of diagnostic radiology, Cyrus Sturgis, Louis Newbergh, Frank Wilson, and Jerome Conn of your distinguished Department of Medicine.

II. THE EDUCATIONAL PROCESS

The surgical fellow or trainee.—What is the proper designation for the young surgical aspirant? The word "resident" obviously has been outmoded, for today very few, if any, of the young surgeons in training programs live in hospitals, though they take their turns living in for night calls. With few exceptions, these men are married and maintain homes of their own. It would appear time to find a word which more appropriately meets the situation, such as "trainee," or "surgical fellow." In German surgical clinics, after which the American system of surgical training is patterned, the trainee has been known since Langenbeck's time as an assistant. In universities, an assistant who holds a fellowship and who gets his emolument from the Department of Surgery and not from the hospital, deserves to be known, I would suggest, as a "surgical fellow."

The scheme of training of surgeons has varied greatly over the years. There apparently was no scheme other than lectures and observation up until the time operations became safe. When hospitals came into favor with the startling accomplishments made possible through antiseptic and aseptic surgery, the presence of full-time assistants in surgical clinics undoubtedly became necessary for the first time. The modern surgical training program probably began with that era. We learn, for instance, that in 1878 Billroth in his surgical clinic in Vienna had two assistant surgeons on his instructional staff and eight assistants.

Surgical teacher and schools of surgery.—Let us take a brief look at a few surgical teachers whose impress became transferred to a large number of pupils. Such an influence is not readily susceptible of analysis. Hunter would, of course, rank high in such a list. Unschooled and self-taught save by apprenticeship to his brother, William, John Hunter became the surgical teacher, who, employing largely the lecture and associate-in-research technique, influenced more pupils than any other surgeon of his or earlier times. His curiosity was insatiable. He was a keen observer, a great thinker, and probably one of the first in the surgical field to employ experimental and analytic methods.

In his magnificant address on "The Training of the Surgeon" (*J.H.H.B.*, **15**:267–75, 1904) delivered at Yale University, June 27, 1904, Halsted tells the story of his attraction and capitulation to the scheme then prevalent in the German universities. It may surprise some to learn what, only 15 years after the opening of the Johns Hopkins Hospital, Halsted had to say concerning an organization plan for the House Staff. Said Halsted: "The average term of service for the interne on the surgical side who succeeds to the house surgeonship in this hospital is at present eight years—six years as assistant, in preparation for the position, and two years of service as actual house surgeon." Those, too, were the days when residents lived in the hospital. Halsted and Osler not only encouraged but demanded celibacy of their residents. I wonder how they would have reacted to the current-day unconditional surrender to the biological urge which has long since overtaken medical students before they even thought seriously of joining a residency scheme of training.

Patterns of the Germanic-Halsted scheme of surgical training are in evidence today in all the university surgical clinics in this country. Practically all of German surgery stems from Langenbeck and Billroth. Bernhard Langenbeck, who succeeded Dieffenbach to the chair of Surgery in Berlin in 1849, got his start with his Uncle Konrad Martin Langenbeck,

anatomist and surgeon, at Göttingen. The great influence of Bernhard Langenbeck is owing in part to the circumstance that he was trained primarily as physiologist and histologist at Göttingen before assuming the headship of Surgery at Kiel. It was Langenbeck who was responsible for Billroth. One need only read some of the exchanges of letters between Billroth and Langenbeck to appreciate and understand the warmth, generosity, and stimulating effect of these master surgeons upon their pupils. These were some of the characters and attributes responsible for the sway and moral power with which they unconsciously influenced their pupils. Eiselsberg, in turn, a pupil of Billroth, trained a host of surgeons whose names were amongst the foremost of the past generation, a few of whom still are active in German-speaking universities. It is perhaps of more than passing interest to us now to recall that John Hunter, with very diffuse interests in biology and surgery, trained and influenced a large number of people. Lister with a heavily concentrated interest trained few surgeons, but his great influence upon surgery is still a continuing one. Hunter was truly a generalist; Lister was a teacher with a highly specialized interest. It is usually the generalist radiating enthusiasm and warmth for learning who develops or leaves behind pupils who distinguish themselves in the same discipline.

The prospective medical student.—The student contemplating the study of medicine will need to anticipate a more disciplined life than has been customary during the past three decades. It seems to me that psychologists, sociologists, and professional homemakers have dominated the scene far too much and too long, de-emphasizing the discipline of learning, overstressing play and the togetherness motif. The early and more thorough training and discipline of gifted Russian children in the methods of science are alerting us to the necessity of becoming converts to more stringent methods of training our scientists of tomorrow.

How to attract students into the scientific field must continue to be the pursuit of all educators. It is not only the biological sciences which suffer, but singularly, too, the field of physics. Physicists cracked the atom yet find it necessary to invade elementary schools in attempts to persuade talented students to think of physics, chemistry, and the engineering sciences as satisfying outlets for their abilities and energies. We biologists must make an effort to attract more students into our area. As yet, we cannot match the accomplishment of the physicist. We have made great progress in sanitation and in overcoming a number of infectious diseases. The back of the polio problem has been broken. However, heart disease, cancer, accidents, and congenital deformities take a far larger toll than is justifiable in the light of our current knowledge, and we are far from a satisfying solution to any of these. Hospital infections command the respectful attention of all divisions of medicine. Moreover, illnesses such as diabetes, cirrhosis of the liver, tuberculosis, peptic ulcer, ulcerative colitis, and a host more of diseases continue to be a real concern not alone to physicians and surgeons occupied primarily with matters of practice, but also to the educator and those interested primarily in research.

Mistakes have been made in overemphasizing how difficult it is to get into medical schools. Deans and admission committees for medical schools know only too well that after considerable hesitation and many protestations, they often conclude their deliberations by taking many a weak applicant. We need to reassure high school and college students that they do not need to be supermen to gain entrance to medicine.

The length of the training period obviously frightens many. Shortening of the premedical and medical school years is definitely in order. Johns Hopkins and Northwestern have begun the swing back to a more realistic view of the situation. It is regrettable indeed that,

in meeting military service and completing a first-class specialty training today, survivors are well along in their late thirties and past life's meridian, before they embark independently upon their life's work.

Need for better stipends for surgical fellows and trainees.—Perhaps what is needed most of all is an adequate fee for service for the trainee in the surgery program. He should be paid a living wage. In 1960, a beginning salary of $3,600 may be a bit out of line with what is the current going wage for trainees, but it is in effect a low estimate of the value of such a person to the hospital and the department he serves. From there on to completion of his training, he should, I feel, be given annual increases of $600 to $900. For the trainee anxious to complete a Ph.D. program with his eye on the academic ladder, advancement in the clinic surgically is always a bit slower, but it is this individual who especially merits more rapid increases in pay. It is my belief that if the pay schedules for our surgical fellows or trainees could be stepped up, all the worry and concern over completion of the training program in a 4-year period would disappear.

An experience toward the end of World War II made an important and indelible impress upon my mind. I recall discussing his work with a very able second-year house officer, some years ago, late in December. Through a fortunate circumstance, I told him it was going to be possible to increase his pay from $1,800 to $3,600 a year. For a moment, he looked at me somewhat incredulously. Then tears began to roll down his cheeks. He said, "Now I can buy my wife a Christmas present." This surprise remark suggested the need of terminating our discussion somewhat abruptly lest my feelings find similar expression.

To my way of thinking, the internship should be abolished. The clinical clerkships of the modern-day medical school are good enough to permit the trainee to go directly into the field of his choice. For the medical school graduate directing his steps toward general practice, provision should be made for a 2-year hospital apprenticeship with emphasis on general medicine, obstetrics, and the surgery of trauma. Arrangements can be made with the other departments so that the surgical fellow is exposed to the diagnostic problems of greater medicine.

Medical schools are slowly and perhaps a bit belatedly beginning to realize that our period of schooling has been too long. I would agree with this. Perhaps the entry of some children to school should be lowered to less than 5 years of age. My information leads me to think that a year could be lopped off the first eight grades, another off the high school period, and that 3 years of premedic work plus 4 years in medical school, with omission of the internship, would be in order. This would give us graduates eligible for surgical training at about age 23 instead of 27.

The entire life experience is really one of continuing education and a reasonable partition between work and play. There is no need to protract the undergraduate learning period needlessly. Learning is a life-long process.

High school graduates and professional training.—Dr. Ruth Eckert, professor of Higher Education at the University of Minnesota, has given me some interesting material relating to trends in elementary education in our country. Public high school enrollments have doubled each decade from 1890 on, rising from a figure of approximately 200,000 which represented 3.8 per cent of the 14- to 17-year-olds in 1890, to 6,120,000 students in 1956, 64.2 per cent of the same age group. For 1960, it is estimated that 70 per cent of high-school-age youth attend public schools and that another 8–10 per cent are in nonpublic schools. No other country in the world remotely approaches this record, which exceeds that of leading European countries by 2 or 3 times!

College gains have been almost as dramatic, with a doubling of attendance every 20 years since the turn of the century. During the latter 19th century the number of high school graduates was only slightly larger than the number of entering freshmen. Today approximately 40–45 per cent of all high school graduates enroll for programs of higher education, including junior and community colleges and technical institutes of collegiate grade.

By the 1970–80 decade, it is believed that 50–60 per cent of high school graduates will enter college. These latter figures, Dr. Eckert informs me, are already exceeded in states like California. She believes that soon a 2-year college degree or certificate may be as common as a high school diploma.

Of all students who enter college, roughly 60 per cent now complete the program for which they enrolled or a similar program. It currently takes approximately four high school graduates to produce one college graduate. But this ratio will probably shift to about three to one, when better opportunities for higher education come into being and when institutions begin to make more discriminating selections of students.

Higher pay for all college graduates and for professional students during their years of graduate training also must come, if we are to increase the number of prospective medical students, biologists, and students in all professional colleges.

Where should a surgical fellow seek his training?—For the surgical aspirant to whom time does not matter too much, what type of surgical group should he join to secure his training? Should it be a department of surgery which focuses primarily on service to patients and the acquisitions of surgical skills? One in which the entire biological learning process is stressed? Or one in which the primary emphasis is on research?

These are not questions readily answered. There are probably almost as many patterns of surgical training today as there are heads of surgical departments in this country. Though all affect to prepare their trainees for the boards, and for careers in surgery, none of them do it in quite the same way.

Length of training period.—One can no longer, I feel, train a surgeon in 4 years; the field is too large and broad, and there are too many things to learn. Moreover, I am persuaded that even a surgical fellow whose primary objective is practice is well advised to put in a minimum of a year in an experimental surgical laboratory. For the trainee leaning toward pursuit of the academic line, an additional year's work in one of the basic sciences should be advised. In our own institution, our surgical fellows with such inclinations usually elect to pursue either physiology, biochemistry, or microbiology.

For the community surgeon, therefore, even today, I believe, it takes approximately 5 years to complete an acceptable period of training. For the academic surgeon, this time is still, as it was in Halsted's day, 7–8 years. In the Department of Surgery at the University of Minnesota, where the man pursuing the academic line conventionally seeks a graduate degree, at least 1 year of which period of training is spent in one of the basic sciences, the mean period before satisfaction of the Ph.D. requirement is approximately 7 years. Rarely is it less than 6, and periods from 8 to 10 are not unusual. After about the fifth, or certainly with the beginning of the sixth year, these men conventionally become Instructors in Surgery and, on completion of the Ph.D. requirement, become firmly attached to the department in the role of Assistant Professor. By this time, these men have acquired a list of 15–20 or more publications, having spent at least 2 years in experimental laboratories. Their names often have become fairly well known to their surgical and medical colleagues, through the impress which they are making upon some field of surgical activity. By then,

these men have come to know something of their own shortcomings, as well as their special lines of talent. If this young surgical aspirant, who by this time has often acquired a large family and whose wealth is measured only by his knowledge and skill, has been fortunate to acquire a wife with sympathy for his work—a wife with a background of some education herself and a respect for it—he is destined for a distinguished career in surgery, and his craft carries the ballast necessary to weather the storms and gales of a competitive life, which must be faced by all surgical mariners.

The surgical specialist.—What of the surgical specialist? In our clinic, we have become conditioned to advise a 5-year period of training, 3 years of which have usually been spent in general surgery, the remaining 2 in the specialty. In orthopedics and urology, this scheme has worked nicely. Neurosurgeons, on the contrary, are more disposed to feel that they can give complete training to their neurosurgical aspirants. It would be my feeling that, when the present generation of neurosurgical teachers leaves the scene, who themselves have had exposure to a period of training in general surgery, a deficiency in the training of neurosurgeons will become apparent. It may be that in neurosurgery, the ratio might be reversed, the candidate spending 2 years in the general field and three in the specialty.

There is no question but that the modern surgeon has suffered somewhat in the de-emphasis which has occurred in exposure to training in anatomy. At the turn of the century, it was common, even in this country, for the surgeon to use anatomy as the steppingstone to clinical surgery and for the internist to employ the science of pathology in the same manner. All this has changed. Neither anatomy nor pathology receives proper attention today in most programs for the surgical trainee. In fact, examiners for the American Boards complain of the lack of knowledge demonstrated by examinees in anatomy and in pathology. Some of this discrepancy obviously is owing to the shortness of time for the acquisition of such broad sectors of knowledge. It cannot all be learned in 4 years.

III. UNIVERSITY OF MINNESOTA SURGICAL TRAINING PROGRAM

Let me tell you something of our surgical training program at the University of Minnesota. The unique aspect of our residency scheme of training relates to a close affiliation between medical and graduate schools, for graduate education and training in all medical fields of endeavor. Our medical school became affiliated with the graduate school in 1914. The first Ph.D. was granted to a surgical fellow in 1917. During the 46 years which have intervened since the conception of this program, 839 surgical fellows have been registered in the graduate school from my department, the majority in general surgery. In recent years, several have obtained graduate degrees in the specialties of neurosurgery, orthopedics and urology. Anesthesia, a division of the Department of Surgery, obtained departmental status in 1954.

In earlier years, when questioned as to the advantages from an affiliation with a graduate school, I found it difficult to supply a satisfactory reply. However, after many years, I can give answers which at least are satisfying to me. On the one score, what appears to be a disadvantage works out to be a true advantage. I allude to the circumstance that the fellow gets his monthly stipend by virtue of registration in the graduate school. Registration signifies intent of pursuing study leading to a graduate degree. However, inasmuch as during these years only 75 Ph.D. and 82 M.S. degrees have been awarded, it is obvious that every man did not fulfil his intention.

There is another advantage in the liaison that even the founders of this plan in our

school did not foresee. In the usual scheme of surgical training, the resident is paid for service and in consequence pays a proportionate income tax; with us, because the fellow is a graduate student, his stipend is absolved from income tax up to $3,600. This windfall alone in the present nature of things makes the matter look attractive from the standpoint of the fellow.

Transition from rejection to acceptance.—Many a surgical neophyte, like myself, while reluctantly capitulating to the graduate school requirement to work at a problem of research found, in doing so, that it excited his interest, alerted his curiosity, and left him with a compelling impulse to continue investigative research. Often a man has stayed in the game, finding the pursuit of unanswered problems very satisfying to his soul.

The American language, I feel, stands in great need of a good word to connote the transition from rejection to acceptance. It is a common phenomenon with all of us. What seemed like an almost insurmountable obstacle course turned out to be a blessing in disguise.

I am, too, a product of this type of philosophy. Had it not been for my father's insistent persistence, I probably would have ended up a farmer, which I had always wanted to be.

One spring, while I was still a student in high school, we had on the farm about 50 sows that could not farrow their young. The first two sows with their unborn litters we lost while waiting, on the advice of our veterinarian, "for nature to take its course." I scurried through the *Breeders' Gazette*, *The Farmer*, and several books on the veterinary problems of the farmer which occupied a row on our modest book shelves. A snaring apparatus procured through the advertising columns of one of these journals proved useless. Much to my amazement, I found my own hand the best instrument to deliver these pigs. The effort cost me about 3 weeks of school, for as those of you who have had obstetrical experience know, such assignments are time-consuming, especially for multiple births. For me it was a task that had to be done. I can still feel, after these many years, the warmth of my father's sense of pride in the accomplishment. Three years in college went by before I capitulated to his pleas to have a go at medicine. That last summer on the farm, during World War I, when help was very scarce, it fell to my lot to haul manure every day for about 3 weeks during a hot spell between haying and harvesting. Well, it was too much. Anything, I thought, would be better than this! So through the portals of pigs and manure, I come before you tonight.

Role of the experimental laboratory in surgical training.—At the University of Minnesota we have a large number of surgical fellows by conventional standards, 20 in the specialties and 85 in general surgery. Obviously, we could not manage so many with only 180 surgical hospital beds, were it not for our generous laboratory space, where about half of our fellows in general surgery spend their time.

Our fellows have come to recognize that, if they can get to the laboratory, they will find there the best incentive to drive them on to accomplishments and objectives. In the experimental laboratory, they learn to wrestle with unsettled problems. While training the young surgeon's hands, a research experience in the laboratory simultaneously sharpens his intellect and raises his sights on the distant horizon. Our difficulty is not to get the talented young man into the laboratory but rather to keep the unqualified out. We do not want anyone in the laboratory who may waste his own time there, as well as ours. I am inclined to believe that surgical Boards presently will come to accord greater recognition to the importance of the experimental laboratory in the training of surgeons.

There is no doubt that our best surgeons are those who have spent considerable time in

the experimental laboratory. In addition, our top men are sent to physiology or another preclinical science such as biochemistry or microbiology for a year or more to obtain special techniques and knowledge, which can be used to advantage in attacking research problems. It is a pleasure to acknowledge before this group of surgeons the great help my department has received over many years from Dr. Maurice B. Visscher, chairman of the Department of Physiology, who, by the way came from Holland, Michigan. His imprint on many of our men is very evident.

You may be interested in knowing that only eight of our 85 fellows in general surgery are supported by the departmental budget. Organizations and friends, kindly disposed toward departments interested in fostering a spirit of research, have come to our rescue. Together with a few of my associates, I am continually on the prowl for likely sources of support, a responsibility which incites insomnia and creates the necessity for giving much thought during waking hours to this modern-day problem of professors.

IV. TRAINING PROGRAMS IN VOLUNTARY HOSPITALS

Many of you do your work in voluntary hospitals in cities which, by Minnesota standards, would be considered large. In the final analysis, of course, every public institution is voluntary, otherwise it ceases to exist. *Service*, *Teaching*, and *Research* are not responsibilities which relate only to municipal and state hospitals and medical schools. They are functions also of voluntary hospitals—especially so, if such hospitals, today, effect any pretense of standing out in the community or of making an important impress upon the national scene in medicine. I have the feeling that voluntary hospitals in metropolitan areas where there is a medical school would do well to establish a training program, engaging a full-time surgical supervisor, who is a representative of the medical school. Such a hospital obviously needs a research laboratory. It also needs funds for support of the enterprise. The surgical supervisor must have a minimum of ten free beds for his own purposes and for the instruction of his group of trainees.

Any hospital which professes to rise above mediocrity must set goals which are a few cuts higher than those of other institutions with which it is competing in the community. On my first visit to the office of a very distinguished graduate of your school, Dr. William J. Mayo, I was impressed to find on his desk the famous mousetrap quotation from Emerson: "If a man can write a better book, preach a better sermon, or make a better mousetrap than his neighbor, though he build his house in the woods, the world will make a beaten path to his door." It is still this way with the world. All modern-day hospitals are expected by the public today to render a superior brand of *service*, which reflects warmth and sympathy. We need to imitate the good Samaritan, in our attack upon the problem of community illness. But the hospital that is to stand out must do much more. It must build itself a responsible and distinguished staff. It must make an effort to maintain a keen interest in research.

The university's role in sponsoring surgical training programs.—What is the role of the university in such an enterprise? Its function primarily is to establish desirable goals. Meeting those standards and maintaining them is the responsibility of the hospital that embarks on such a program. The university wants nothing for itself in such an endeavor. It only wants to help in creating the kind of development that will reflect credit on the hospital. Expansion of the training program for specialists in our country is contingent in large measure upon voluntary hospitals in metropolitan medical school areas providing

and supporting an adequate number of beds to energize the activity of full-time medical school clinical supervisors. It is not difficult to believe that with the whole-hearted support of a far-seeing staff and board, the time may not be far off, when some of the keenest minds of the clinical staffs of our medical schools will be doing their important work in voluntary hospitals that are willing to build adequate research laboratories and support enough free beds to provide a reasonable clinical training program. Anyone worthy of the opportunity to guide and supervise the operation of such a training enterprise will have enough research potential to attract the notice and largesse of organizations and societies that make generous research grants to investigators with ideas.

Your own Fred Coller was the first chairman of the Study Surgical Section of the U.S.P.H.S. which has made awards in the support of meritorious research that has run into several million dollars. Fred Coller, too, probably more than any other American surgeon has made it possible for voluntary hospitals in areas somewhat removed from a university to participate in training programs. We have had an opportunity this afternoon to see what this type of cooperative enterprise can achieve. What Fred Coller and his associates have done in this regard in this area deserves the respectful attention and emulation by heads of surgery throughout our land.

Surgery less empirical today.—Surgeons are definitely moving away from the empiricism of the past demanding objective proof of the alleged virtues of methods and procedures they invoke in therapy. The "Surgical Forum" of the American College of Surgeons has played an important role, I believe, in emphasizing to all surgeons the great importance of the experimental method. When this venture of the College came into being, many believed it was doomed to failure, owing to lack of interest of the profession in this type of presentation. What poor prophets these men were! Today no surgeon can afford to neglect reading the *Proceedings of the Forum.* It is truly the Arabian Nights reader for surgeons. Moreover, a generation of surgeons nurtured on the "Surgical Forum" and its *Proceedings* will enable American surgery to rise to a higher level.

The surgeon's library is his real consulting room. It is here the surgeon has the opportunity to acquaint himself with current and older thoughts on many subjects. "Infinite riches in a small room" is probably the finest definition of a library ever devised. We are all dependent upon our books for companionship, but for all professional men, an accessible library is an essential necessity in the day's work.

Today when a surgeon leaves the university and medical school where his training in surgery was acquired, his continuing tie with an educational institution has been broken. It is in filling this hiatus that the American College of Surgeons and its chapters have played and continue to exert a very strong and important influence. You, in this state, have set an example which has not been equaled and which will not be easily surpassed.

The nature of discovery.—It is not easy to make a new discovery, as everyone who has tried can testify. Most of us cling to tradition as though our very lives depended on it. This is probably one of the reasons why traces of originality are so rare in surgeons. Surgeons as a group are probably more conventional than most professional groups. Wider acceptance of the experimental method, will, I believe, do a great deal to correct this situation. The late Charles Kettering (1944) once said: "An inventor is a fellow who does not take his education too seriously." In fact, he is not handicapped by it. In this connection, I might indicate that Dr. Richard De Wall, who currently is my senior surgical resident, built the first successful pump oxygenator, thereby giving a tremendous forward thrust

to the work of Dr. Lillehei and his associates, when many engineers who had concentrated on the problem had failed. Moreover, De Wall did it entirely by himself.

Let me tell you of a personal experience.

At Prescott, Wisconsin, where the beautiful St. Croix River broadens out into a veritable lake, my family has had a country cottage for almost 30 years. During all those years, beginning fairly early in the spring, we have been troubled with a bug which looks not unlike a cockroach. In fact, a number of years ago I had specimens of this frequent and unwelcome visitor in our house examined by the Department of Zoology in our University. They confirmed our worst suspicions: it was the real McCoy, though they gave it the euphemistic name of woodroach. Over many years, I enlisted help and advice from a number of experts, all to no avail. When the cottage was closed for a few days, we invariably found one or more of these creatures in the kitchen sink upon our return. A few years ago, when a fire destroyed a goodly segment of the structure, before rebuilding, I had the chimney torn down at considerable expense merely to ascertain whether a defect was present in the chimney through which these visitors entered. No source of their entry was uncovered. Our uninvited visitors still continued to annoy us.

Prescott is for us a weekend cottage, and it is usually late afternoon or early evening before we get there. One day not so long ago we arrived on a sunny midmorning. As I unlocked the door, I noted one of these intruders just in the midst of squeezing his body beneath the door. I went inside and looked out; true enough, the light of day could be seen beneath the door. By raising the door sill, we succeeded completely in excluding these undesirable visitors. What a long and protracted search it was and how simple in the end its solution! Discovery in my experience is often like that. Many of you undoubtedly have had encounters with discovery not unlike this in your professional lives.

It is important to build hypotheses. Moreover, sequentially they must be subjected to experimental scrutiny. This is the great importance of the experimental laboratory. The importance of critical observation however must not be minimized. This is one of the reasons why it is possible for you and me, who are essentially practical men, to make observations in our respective fields of activity, which can have importance for our own work.

Roaches, the country, the river, woods, a woodpile, and a house were the related items in our problem. It was the crack in the door that emitted enough light to permit resolution of the problem in an effective manner. How long it takes to find that crack! The cancer problem may not be unlike that.

V. SUPPORT AVAILABLE TODAY FOR RESEARCH LABORATORIES

When I was abroad somewhat more than 30 years ago and visited continental surgical clinics and those of the British Isles, I searched diligently for experimental laboratories in use for the training of a surgeon. I found only two: Eugene Enderlen's in Heidelberg, the other that of David Wilkie in Edinburgh.

Surgery was expanding so rapidly through developments in microbiology and pathology that surgeons of the early aseptic era probably saw little need for the experimental laboratory. Such a laboratory in that era was, in fact, only the plaything of the experimental physiologist. Surgeons, then, were too busy devising and exploring the promise of newfound operations to occupy themselves with problems of the experimental laboratory.

Halsted emphasized the importance of the laboratory in the training of surgeons. Today, it is far easier to get support for this purpose than it was 35 or 40 years ago. Monies are

available from many organizations and sources. In my opinion, no departmental head today should neglect the experimental laboratory, not alone because of the great stimulus to research efforts but also because an active laboratory constitutes an important source of growth, made possible by funds readily available for research. And if the young men working in the experimental laboratories are productive, a continuing source of support through this agency is assured.

The future poses a number of difficult problems. In earlier days the only private patient in our hospital was a sick nurse or intern. Times have changed. With the growing prosperity, which I would like to believe will persist, some means of reapportioning the financial reward of clinicians will have to be worked out. On some of the clinical services of our department, 60–80 per cent of operations done are upon private patients. It should not be too difficult to persuade the full-time man in surgery that his chief emolument is opportunity and the privilege of being a part and guiding the destiny of an important endeavor.

VI. ROLE OF THE PROFESSOR

The role of the professor has been defined essentially as being that of teacher, surgeon, and investigator. I would suggest that two other functions for the heads of departments should be added: (*a*) side-line cheerleader and (*b*) regimental water carrier. My great friend, Dean Lyon, who had some of his college training in Hillsdale, Michigan, was wont to say that the best dean he knew was Gunga Din, Kipling's regimental water carrier. Above ali these, however, it is my considered belief that the most important concern of a departmental head is to create an atmosphere friendly to learning. This must be his chief responsibility. He must have the willingness to recognize every type of talent and ability, and to encourage men of promise. From the growth and maturation of such men come the strength and potential power of a department.

Today, surgeons in university clinics enjoy opportunities for creative achievement, unprecedented in the annals of medicine. Opportunity is the great paymaster of the university surgeons. Society's claim upon university surgeons, because of the great advantages which are ours, is equivalent to a mandate to enjoy, appreciate, and make the most of our wonderful opportunities, requiting to society a liberal and just return for our unrivaled privileges. Though the flame of our own lamps may not burn brightly enough to emit luminous light, yet it is comforting and rewarding to know that tending the wicks of the lamps of our associates may succeed in kindling light which can blaze the trails of the future. We who enjoy the great privilege of being full-time members of the university family must continue to hold to the highest ideals of surgery and of universities. And we must lend a helping hand and an attentive ear, as Fred Coller has, to aid representative community hospitals to develop training programs relating their activity to the university.

REHABILITATION—A NEW DIMENSION IN MEDICINE*

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It is an incredible 27 years since I last stood at this lectern. Then, I was a student reporting on research into the action of the epiglottis during swallowing. Dr. Mortensen tells me the x-ray pictures which told that story are still in use hereabouts.

Today I have another story—a story I feel sure will engage your attention through the coming years far more than this epiglottis business. It is the story of rehabilitation.

Briefly, I propose to suggest, during the time at my disposal, that here is an area of medicine which, if properly developed, can contribute a new kind of patient-doctor relationship that might turn out to be as important to our professional growth as the contributions of Hippocrates and Osler.

I know it is dangerous, before an audience like this, to pick out two medical giants and speak of them as if they were the greatest. I have chosen the two whose medical writings were the most prolific and about whom most has been written. The great contribution of Hippocrates was a new method. Simply stated it was, "Look, then think." All natural phenomena could be shown to have a natural antecedent if we would but search hard enough for it. In a world of mysticism this was a revolution.

Osler's great contribution was also in method. It was his emphasis on bedside teaching that tied to the patient the flood of new life-science discoveries pouring from the laboratories.

During the years since I left the hospital I have been engaged in the practice and teaching of preventive medicine. Anyone working in this field is soon impressed by the need for community organization to get the job done. Occupational health, school health, environmental sanitation, communicable disease control—all these are quite impossible with the traditional one-to-one, patient-doctor relationship we all learned to use and to revere in our student days. But, you say, those are problems of community, or you might say, "wholesale" medicine—and to a large extent they are. There is an element, however, in all disease control programs which each day becomes more important to the physician who cares for one patient at a time. That element is management. The division of labor in health care has become so great that unless the practicing physician thinks of himself as a *managing* physician, we face the prospect of such fragmentation of the healing art that the patients themselves, through their leaders, could well take desperate and misguided steps to bring order out of chaos.

Until September 1, 1959, this was to me a dimly felt danger. For 8 years, ever since alumnus John Morrison—now Deputy Medical Director of the United Mine Workers—told my students about it, I have been teaching them this concept; but I must confess

* Delivered before the meeting of the Wisconsin Alumni, University of Wisconsin, Madison, Wisconsin, May 20, 1960.

† Assistant Director for Health and Medical Activities Office of Vocational Rehabilitation.

that not until September 1, 1959, did I feel the full impact of its meaning. On that day I became Assistant Director for Health and Medical Activities of the Office of Vocational Rehabilitation. This is a vast federal-state program that spends almost $100,000,000 a year restoring to jobs workers who have been disabled by disease or violence. Almost 50 per cent of this sum is spent on various kinds of medical care. If you are like most physicians, half of you have never heard of the program. I mentioned that I am the Assistant Director for a reason. I happen to be the first physician to hold that position or any position of comparable authority in this program. It is not because this is a new program. This is no "New Deal" affair. The OVR was created by Congress in 1920, not as a medical care program, but as a program of special education to retrain disabled war veterans in jobs commensurate with their remaining abilities. No provision was made for attempting to decrease the disability. That was accepted as fate, and training was geared to it, except when some dedicated vocational counselor was able to beg charity medicine for a client. Not until World War II, after Drs. Frank Krusen, Howard Rusk, and others had demonstrated what a dynamic process of physical restoration could accomplish, did Congress appropriate funds for medical rehabilitation. The sums made available each year remained small until 1954, when Congress changed the provisions of the Social Security Act and introduced the Disability Freeze concept. As part of these changes it was stipulated that an applicant for disability benefits should be referred to the vocational rehabilitation agency of his state for a determination of his vocational rehabilitation potential. By this means Congress sought to protect the Trust Fund against unnecessary expense. Then, in order to make certain the states could handle the burden, Congress substantially increased the moneys available for vocational rehabilitation and for the first time appropriated money for research and training. At present this research and training alone amount to $12,000,000 a year. Now before any of you begin to feel sorry for your pocketbooks, let me explain that, on the average, in less than 4 years, a rehabilitated worker pays more in taxes than it costs to rehabilitate him, and this does not include the money it would have cost to keep him on welfare. In fact, it costs as much on the average to keep a worker on relief for one year as it does to rehabilitate him.

Last year this program returned 81,000 workers to competitive employment. But this is only a small percentage of those who need rehabilitation. National health surveys indicate that there are over 2½ million disabled citizens and that possibly 2 million could benefit from vocational rehabilitation. About 250,000 are disabled every year, and 88 per cent of these are disabled by chronic disease.

Which brings me back to you and management. With the aging of our population the problems of chronic disease are rapidly taking precedence over those of acute disease. The proper management of acute disease differs from the proper management of chronic disease. These differences become particularly apparent in the rehabilitation phases of the management of a chronic disease which has resulted in a substantial disability. This is the kind of case with which the Office of Vocational Rehabilitation is daily confronted, and it is this kind of case that illustrates the division of labor in health care which threatens to produce a low grade of care if each fragment is allowed to impress itself on the patient without the proper coordinating force to assure that the individual therapies are additive and not antagonistic. And this problem is not confined to rehabilitation. It is a problem to some degree throughout the whole structure of medical practice.

In the rehabilitation process these are some of the disciplines involved: The general

practitioner and most of the specialties of medicine (and osteopathy, I might add), nurses, pharmacists, psychologists, physical therapists, occupational therapists, social workers, optometrists, opticians, dentists, prosthetists, orthotists, speech and hearing therapists, mobility trainers (for the blind), and vocational counselors. That is not all, but it is enough for our purpose. Most members of some and some members of all the listed paramedical disciplines work as individual entrepreneurs establishing a one-to-one relationship without supervision or control by physicians who are, after all, the only profession among them trained to consider the whole person.

The restoration to social function of a severely disabled person is a complicated process involving many of the disciplines enumerated. Someone must see that they get these services. At the present time the coordinator for these services—if there is any coordination—is too often the patient himself, unless he is fortunate enough to be in the hands of a physician who thinks of his relationship to the patient not on a one-to-one basis alone, but on a many-to-one basis as well, *with himself as the captain of the "many"*; or fortunate enough to be eligible for the services of vocational rehabilitation. In the latter case, however, the coordinator will ordinarily be, not a doctor, but a vocational rehabilitation counselor. Under our program the vocational counselor is the *pivot person*. He makes the final decision whether the agency will spend money for medical rehabilitation and for what kind of medical rehabilitation. Before you get too disturbed over this, recall that the vocational counselor was the pivot person in this program before there was any medical rehabilitation in the program. Government programs grow by accretion just as medical schools do, and it takes a frightful lot of doing to rationalize them. Ask any Dean. Except in revolutions you don't remake a 40-year-old program overnight. The problem we face in microcosm in vocational rehabilitation can face the whole of medicine in another generation unless we vigorously face up to the problems of medical management.

Please don't get the false impression that the program I am working in is medically all wrong. It has been run by dedicated people, and it has done an enormous amount of good. It can still teach the medical profession a great deal about the therapeutic value of goal-directed training. Its greatest medical weakness has been lack of medical administrative manpower. To overcome this, our goal is to place medical administrators at national, regional, and state levels, and to provide weekly face-to-face medical consultation to every vocational counselor so he will not be forced to make a medical decision on any person. Few states come anywhere near this goal at present. And, by the way, these medical consultants are local practitioners who work 2 hours or so a week with a counselor, reviewing cases being considered for vocational rehabilitation.

When I suggested that many patients have to act as their own coordinator of services or do without, I suspect many of you took exception to that and said to yourselves, "It doesn't happen to my patients," and I am sure this is true in many cases, but not all. One of the most discouraging aspects of rehabilitation, as we see it, and the United Mine Workers know this well, is the enormous amount of work required to undo the physical and emotional damage caused by the neglect our patients have suffered through the years between the onset of their disability and the time of rehabilitation. Yes, it is *years*.

In two states I visited recently, they told me that the patients accepted for rehabilitation on their program average 6 years from the onset of disability to entrance on their rehabilitation program. Somehow many disabled patients are falling through the cracks in our care before they have been returned to social function. Dr. Rusk has said that 60 per

cent of the medical care given at his New York University Institute for Physical Medicine and Rehabilitation goes to overcoming the physical damage of neglect.

Why is this? Is it because in the field of chronic disease our profession still has a limited concept of its responsibility? As long as a service can be provided by ourselves or those under our immediate direction, the American physician, by and large, does a pretty good job. It is when the patient must be guided through a wide range of services not part of our training and not under our intimate control that we are found wanting. The hemiplegic who remains bedridden and useless through lack of gait and speech training and instruction in one-handed techniques, the coronary whose shoulder is allowed to freeze, the paraplegic who develops decubiti, contractures, and stag horn renal calices, the quadriplegic who sees no hope because he has not been told of the jobs he can do with what he has left, the amputee whose limb has been removed without previous consultation with the prosthetist and the stump left to become limited in motion, flabby, and difficult to fit—these and many other conditions call for the assistance of paramedical and training personnel. Unless we accept the responsibility to manage the patient's entire return to function, we must expect the patient to get paramedical and training services without our consultation and guidance.

The changing nature of health problems is forcing the profession of medicine toward a major decision. Either we are going to continue our time-honored attention to health, which, as you know, in the Anglo-Saxon root means "whole," either we will adapt ourselves through medical management to the whole patient and the whole problem, or we can expect a long cycle in which our area of responsibility for health care will be gradually constricted as it is now in some parts of rehabilitation. Even if this should happen to the whole profession I am confident it would not be the final pattern. The sick person will always want to turn with confidence to someone who cares; but if we permit the fragmentation of health care to increase it may be generations before the people realize what they have lost.

Just as Hippocrates and Osler changed the nature of medical practice by a change in method, so today the portents call for another change in method to meet the changing nature of health problems. Perhaps the man whose name will be associated with this wave of the future is among the students here today. I am confident he is somewhere now.

Rehabilitation has pointed the way in this new emphasis. Increasingly, medical schools are using this process to give students experience in the many-to-one management approach to complicated care. Students are learning the therapeutic value of bringing in the rehabilitation team not when the physician has finished his work, but as soon as the disabled patient can think of something besides pain. In the dynamic rehabilitation process, the patient's concentration is shifted from what he has lost to what he has left. The plans for his refitting, retraining, and re-entry into the world he has lost are the sweet syrup of hope in his therapeutic regimen.

It is neither necessary nor desirable that the physician personally provide all the services of the rehabilitation process; but by the very nature of his training and his relationship to the patient he is best fitted to provide leadership to it, to give it the stamp of acceptance at a time when the patient is afraid, to assure proper timing, and to provide the optimum spectrum of services. If our students are to learn this, they will learn it the same way they learn to evaluate the pulse—by explanation and experience. Thirty-three medical schools now have grants to help develop this type of training. Within two years we hope to see every school receiving such a grant. Wisconsin, I am happy to say, has made a beginning. This past winter, with Dr. Bowers' blessing and help, Dr. Siebens and I visited half-a-

dozen rehabilitation centers and training programs in the New York area. Very wisely President Elvehjem has created a university-wide committee to explore this problem. In all universities rehabilitation resources reach beyond the medical school. Here at Wisconsin, training in physical therapy, occupational therapy, and vocational rehabilitation counseling are in the School of Education; the Speech and Hearing Clinic are in the Department of Speech; training in psychology is in both the Medical School and the School of Education; and, of course, nursing has its own school. Out of this exploration should come a richer, more integrated program.

As I have been discussing the manifold ramifications of the rehabilitation process, many of you have no doubt been thinking, "This man wants me to be all things to all people. I am already up to my ears just maintaining a one-to-one relationship with my patients. Does he want me to give that up?" Never! When the father image disappears and with it the patient-doctor relationship, it will mean man has acquired a new midbrain. I don't expect it. The very nature of man's animal reaction to illness makes the one-to-one relationship the backbone of our profession. The many-to-one relationship is a device to protect the one-to-one relationship. The importance of the many-to-one is technical, the one-to-one emotional. To help the practicing physician accomplish both of these relationships some of us with M.D.'s—call us medical administrators if you will—must, for the most part, give up the one-to-one relationship. It is our job to create and maintain the administrative machinery which will always be in tune with the one-to-one relationship and will make the time demands of management as small as possible for the practicing physician. In this country the development of this kind of relationship among physicians is in its infancy. We will need all the cooperation, understanding, and good will there is in us to make it succeed.

We *must* make it succeed, for this cooperative relationship between medical administrators and practicing physicians is the only apparent way the practicing physician can accept the full burden of medical management; and unless we accept the full responsibility of management through the entire spectrum of health services from the promotion of health to the rehabilitation of the convalescent, we face an era with gradual debasement of diagnosis, fragmentation of therapy, and a decrease in the prestige of our great profession.

The medical profession has successfully met the challenge of change for 3,000 years. I am optimistic that this new dimension will meet this new challenge to medicine.

Letter to the Editor

Perhaps one of the most salutory (and least heralded) benefits deriving from the new curriculum at Western Reserve University School of Medicine is to be found in the impact of the Continuity Program on the teaching of Human Reproduction.

Parturition represents the most predictable medical crisis we know, and the teaching of human reproduction presents an opportunity for "anticipatory continuity" between physician and patient. Once conception has taken place, delivery is as sure as death, although the time of its expected occurrence is by and large easier to date. Obstetric teaching presents, in like manner, an opportunity to establish continuity of contact between the student and patient prior to—rather than after—the surgical crisis which faces her.

The purpose of the Continuity Program in the curriculum at Western Reserve University is to break through the restrictive impact of the student's schedule as it influences and delimits the presentation of illness. Not all medical entities can be forced into the confines of a 2-month clerkship. Accordingly, for the last 16 months of the 4-year medical course, the present curriculum allows to each student a half-day per week during which time, under the guidance of his preceptor, he has the opportunity to establish and maintain contact with various patients on more of a long-range basis.

The present Obstetric and Gynecologic clerkship at Western Reserve takes advantage of this program in the presentation of the subject of human reproduction. Thus, the fourth-year student who will ultimately take his clerkship during the months of February and March first comes to the outpatient division of MacDonald House during the month of October on one of the half-days of his Continuity Program. At this time he is assigned an office which will be his throughout his contact with this outpatient service, and he is told that a "practice" awaits him. The patients who compose this potential practice are all (obviously) pregnant, and all have due dates in the months of February and March when he will come on service for his obstetrics clerkship, a fact which the student usually seems to regard as an extremely happy coincidence rather than the result of meticulous planning. This same student will come to the obstetric clinic once again in November, twice in December, and twice in January (at 2-week intervals), and will then participate in the delivery of his patients in February and March.

During these prenatal visits the student gradually accumulates an obstetric practice. The rate at which patients are acquired is guided chiefly by the student's learning pace and his sense of comfort in this new breed of medical practice. As they begin this experience, it is pointed out that the women who are participating have already been registered in the clinic, have been subjected to complete history and physical examination, and that any marked medical abnormalities have been "screened out." Furthermore, after this initial history-physical-laboratory work-up, the patient has been seen at regular intervals. His initial responsibility, therefore, is for an interval history and examination, rather than the more complete case study of the Basic Clerkship.

During these visits a patient-doctor relationship is established. The woman knows that she will be delivered by the same doctor-in-training who is seeing her at every visit. The

system has now been in effect long enough so that most of the patients are anticipating meeting "their own" doctor. The student recognizes that this relationship differs in the degree of personal responsibility he is assuming for the patient's care, compared with that of the mother whom he studied in the Family Study in the first year.

During this period in the Obstetrics Clinic (6 half-days of the 17 half-days available in this 4-month period) no gynecologic patients are introduced into the student practice. The "package" of illness among gynecologic patients fits more nearly with the 2-month clerkship, and the student will see his first Gyn problem on the first day of his clerkship.

During the clerkship the student maintains his office on a daily basis, with the exception of 1 half-day per week when he is absent to follow others of his patients in the Continuity Program. He takes 1 day out of every 6 on Emergency Ward duty, since his office practice fails to provide adequate experience in observing emergencies (twisted ovarian cysts, ruptured ectopic pregnancy, bleeding placenta previa, etc.). His morning hours are arranged for assisting at the surgery on any of his patients, making rounds on his practice, and for scheduled discussion periods. Fundamentally, however, he is treated as a staff man with a private practice, and is called from home when one of his patients comes into the hospital. The traditional system of having four to eight students living on the delivery-room floor for a night-and-day shift has more faculty nostalgia to recommend it than it has academic common-sense. This (previous) system leads to the physician-in-training delivering women whose names he doesn't know, nor does he know whether or not the baby is welcomed or rejected, the mother euphoric or suicidal. Human reproduction could scarcely be degraded more in student eyes! This same system customarily led to the Juniors carrying out pelvic measurements on women whose deliveries they never saw, while the senior students delivered patients whose pelves they had never measured. Prenatal care was taught without follow-up, since the benefits of such care (or lack of benefit) could never be followed by continuous contact between the student and the patient.

At the conclusion of his 2-month clerk ship in February and March, the student will return one afternoon in April and one in May as a portion of his Continuity Program. At this time he will have scheduled both *post-partum* visits as well as post-operative check-ups for his gynecologic patients. The Continuity Program has permitted a contact with some of his patients, in other words, from October through May, giving him a far better concept of the impact of child-bearing on the patient, her family and through them on the community, then could be achieved with a more discontinuous system.

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ABSTRACTS FROM THE WORLD OF MEDICAL EDUCATION

ANGELA SANCHEZ-BARBUDO, PH.D.
Abstract Editor

The Doctor in International Health—United States Program in Iran. THOMAS MOULDING, M.D., and FRANZ ROSA, M.D., M.P.H. American Journal of Public Health, Vol. 5, No. 5, pp. 696–708 (May), 1960.

Since 1951 Iran has been a beneficiary of the health program sponsored by the United States as part of her technical and economic assistance to underdeveloped nations. This report describes the organization of the program in that country and examines its operations and progress up to 1957, with special emphasis on the role of the physician and the importance of medical education for this type of program. After several changes in its administration, the program is at present administered by the *International Cooperation Administration* of the State Department, with the Public Health Service of the Department of Health, Education, and Welfare providing personnel and technical consultation. Patterned after the *Servicio* organizations established in Latin America, it is now operated through a special agency of the Iranian Ministry of Health (the "Public Health Cooperative Organization") through which Iran and the United States can pool more effectively the allocated funds, supplies, equipment, and personnel. Although at first it was directed jointly by American and Iranian physicians, since 1956 the leadership of that agency is in hands of the Iranians (who have also assumed most of the expenses), while the role of the Americans has been limited almost entirely to that of consultants. Prior to the establishment of the U.S. *Technical Cooperation Program*, or *TCP* (the name by which the health program is referred to most frequently), the health situation in Iran had been surveyed objectively, thus aiding considerably the planning of the later work, as is shown in this report—which describes in detail the activities and progress of the *TCP* in different fields of endeavor. Discussed are the *Malaria Control Program*, the *Demonstration Programs* (a training program with the goal to adapt techniques to Iranian culture and to provide for the country a core of Iranian leadership in medicine and health); *Environmental Sanitation; Communicable Disease Control Programs*, *Laboratory Activities*, etc. Since much of the success of such a health program depends on health education, it was found advantageous in Iran to have a separate Division of Public Health Education, one of whose major functions was to explore and exploit fully the possibilities of the "mass media" of education. Although the *TCP* in Iran was primarily concerned with preventive medicine and medical training, whenever possible it also provided aid to hospital and treatment clinics (technical assistance more than financial support). A large section of the report is devoted to a discussion of the crucial role of the American physician in the Iran Health Plan, and in similar programs in "underdeveloped countries" where public health planning represents the work of many different categories of personnel. The authors (both of whom have actively participated in the described health program in Teheran) stress the point that the largest single barrier to the development of Technical Cooperation Health Pro-

grams, in Iran as elsewhere, has been the difficulty in recruiting qualified Americans, which has been especially true in the case of physicians (despite intensive recruiting efforts, nearly half of the positions for doctors needed in the program in Iran were never filled). This is regrettable, it is pointed out, not only for the country recipient of health aid but also for American doctors who miss the many advantages the overseas positions offer, such as the furthering of their medical education by dealing with a different group of diseases, or the acquaintance and work with a different culture and race. The greatest advantage to a physician, however, in the view of the authors, is the opportunity to offer service of a significance rarely possible in the United States.

Health of the Americas and the Pan American Health Organization, Part VIII, pp. 77–93: Health Manpower (prepared for the Committee on Government Operations, United States Senate and its Subcommittee on Reorganization and International Organization, May 9, 1960).

This section of the Pan American Health Organization's program deals with the problem of health personnel (doctors, nurses, engineers, dentists, veterinarians, and auxiliaries), and their training in the Americas. Nobody doubts that the development of health and medical services in both Americas will require increasing numbers of trained health workers. Yet, while educational opportunities and facilities vary widely in the different nations of the continent, the fact is that at present no American country has a supply of health personnel adequate for rapidly expanding health and medical programs. A survey of the health services in North, Central, and South America (based on all available statistical figures and accompanied by graphic illustrations) shows the discrepancy between the existing number of physicians, dentists, veterinarians, of the medical school facilities and their yearly output, and the numbers estimated to cover the needs by the year 1980.

The Impact of Psychoanalytical Theory on Education. DAVID C. MADDISON. The Medical Journal of Australia, Vol. 1, No. 22, pp. 338–342 (May 28), 1960.

The many controversies which surround the use of "orthodox" psychoanalysis as a therapeutic technique tend to confuse the basic issue: that by now it is an established fact that a solid core of knowledge bearing on human behavior in health and sickness has been derived from psychoanalytical theories and observations and has been repeatedly confirmed clinically. Dr. Maddison (a Senior Lecturer in Psychiatry at the University of Sydney), believes that Freud's work—whose unique quality lies in its virtually universal applicability—is well apt to provide a deeper insight into the normal processes of child development, and therefore should be of the greatest importance for all those concerned with any phase of education. The theory of learning, brought to light by teachers themselves and by non-analytical psychologists, is, as the author points out, by no means incompatible with psychoanalytical views on child development (cf. Dollard and Miller: *Personality and Psychotherapy: An Analysis in Terms of Learning, Thinking and Culture*, New York: McGraw-Hill, 1950); neither is Freudian psychology incompatible with recent advances in the study of the brain structure and function. These views are substantiated in the present paper by a brief discussion of the analytical theories of most vital concern for child development, and of their application to education (e.g., those referring to determinism; the role of the instincts; the reality principle; sublimation; repression and identification; reaction formation; rivalry and aggression; difficulties in learning, etc.). Although the author confidently predicts, for a near future, the integration of Freudian theories on child development into pedagogy and the theory of learning, he does lament the fact that so far the direct impact of psychoanalytical knowledge upon the theory and practice of education has been, generally speaking, remarkably small,

not only in Australia but throughout the world, including the United States.

La istoterapia nel quadro della medicina moderna (Histotherapy within the Frame of Modern Medicine). PROF. MARIO CORDARO. Minerva Medica, Vol. 51, No. 36, pp. 1806–11 (May), 1960.

The evolution of medicine in the last two decades has brought about profound changes in many of our concepts, and many new principles have invaded the fields of biology, surgery, and, above all, therapy. In this last realm, however, there exists today an area of innovation which is still regarded with diffidence and skepticism by medical practitioners as well as by outstanding scientists, namely that of *histotherapy*. This new method is defined in general terms by the author (a pathologist at the University of Padua) as a cellular therapy which attempts to cure not by merely destroying the morbid agent or by helping to overcome the functional insufficiency of some gland, but *by stimulating the entire organism to react with the proper strength against all manifestations of morbidity*. This approach, it is pointed out, though differing in many aspects, may be considered a return to the Hippocratic concept of medicine, inasmuch as histotherapy, the same as the ancient one, is also concerned with the sick rather than with the sickness, and with the whole organism rather than with the morbid agent alone. The essential points, which are developed in all their aspects by Prof. Cordaro, can be résuméd as follows: (*a*) histotherapy consists in the use of human or animal tissues which are introduced into another organism (through inoculation or injection) with the purpose to stimulate therapeutic activity; (*b*) histotherapy, which comprises various techniques, is closely linked to Hippocratic medicine, but its starting point is much more modern and must, in fact, be looked for in the experiments of Brown-Séquard and in the biological studies of Haberland and Carrel; (*c*) research on the mechanisms of action has cleared up some points in the theory and practice of histotherapy, while others still remain obscure. Although it applies various different techniques, histotherapy has well determined and, according to the author, undeniable therapeutic effects. Because of these effects and because of the scientific principles it is based upon, histotherapy must be considered as a substantial and valuable part of medical advance in the organic field (for a complete bibliography on histotherapy up to 1955 see M. Cordaro (ed.): "La terapia tissulare," *Minerva Medica*, 2d ed., 1955).

The Process of Learning and the Teaching of Dentistry. ROY T. DUROCHER, D.D.S. Journal of Dental Education, Vol. 24, No. 1, pp. 42–47 (March), 1960.

"How to learn how to learn and how to think are high goals in all real education." This statement (by J. L. T. Appleton, then Dean of the School of Dentistry of the University of Pennsylvania) is discussed, and today's theory of learning is examined, with special emphasis on their application to the teaching of dentistry. Of special importance in this field, the author points out, is "social learning," i.e., the process by which the individual becomes prepared to cope with social conventions: the pressing role of the business aspect of dentistry requires that the student be alerted to the socio-economic environment within which he will work.

Über die Fortschritte in der Erforschung der Stammesgeschichte des Menschen (Recent Advances in the Study of the Evolution of Man). J. SCHAEUBLE. Deutsche Medizinische Wochenschrift, Vol. 85, No. 23, pp. 998–1003 (June 3), 1960.

In this paper, the Director of the *Anthropologische Institut*, University of Kiel, revises medicine's stand on Darwinism in the light of the results of the latest evolution studies. In the last two decades nothing has been brought to light which would change fundamentally Darwin's concept of man as the result of a long evolution process manifest in the alterations of form and *modus*

vivendi. From the scientific point of view, the origin of mankind must still be considered a part of the biological evolution history of our earth. Yet recent advances in biological research, especially in genetics, have provided certain indications of great significance for the causal understanding of the evolution process (cf. Fisher, Haldane, Dobzhansky, *et al.*). Some of these "clues," especially those referring to the phenomena of mutation, selection, and isolation regarded as evolution factors, are discussed in detail by Dr. Schaeuble. On the basis of genetic studies in the field of the evolution units (*populations*) the possibility of a macro-evolution (sometimes considered by palaeontology as an explanation for the great gaps apparent in the evolution from a non-hominide ancestor to the *Homo sapiens*) seems to have been eliminated in favor of a step-by-step micro-evolution. Furthermore, an attempt has been made to determine the evolutionary trend by means of a closer study and more exact knowledge of the still existing primates (which zoological classification includes also the *hominides*). The author's discussion of the relationship between palaeontology and genetics is based to a large extent on Gieseler's work (cf. "Die Fossilgeschichte des Menschen" in *Die Evolution der Organismen*, Stuttgart, 1957) and Haldane's theories (cf. *Human Evolution*, in Jespen-Simpson-Mayr, *Genetics, Palaeontology and Evolution*, Princeton, 1949), as well as on the recent findings of other outstanding scientists in that field (a substantial list of biographical references is included at the end of the paper).

NEW BOOKS

KENNETH E. PENROD
Book Review Editor

Abstracts

Physical Pharmacy—Physical Chemistry Principles in Pharmaceutical Science. By ALFRED N. MARTIN. Philadelphia: Lea & Febiger, 1960. 680 pp. $15.00.

This book was written in an effort to unite the theory and practice of the pharmaceutical sciences for the student in the new program being planned for the American Colleges of Pharmacy. The book is kept at a level which does not presume a knowledge of physical chemistry or of mathematics beyond the beginning college course and should be followed easily by the average upper-class pharmacy student. Various sections of a more advanced nature, set off from the main text in closely spaced type, may be omitted in the first reading. The book begins with a review of dimensions and units and a discussion of certain mathematical principles. The remainder of the book follows a path from atomic and molecular structure through the states of matter to the discussions of solutions and colloidal dispersions. Throughout the text the properties of pharmaceutical systems and the fundamentals underlying the formulation, compounding, and stabilization of medicinal products are stressed.

A Practical Guide for General Surgical Management. By JULIAN A. STERLING. New York: Vantage Press, Inc., 1960. 62 pp. $3.00.

This book was written for the use of hospital interns and residents assigned to surgical ward service. It is intended to orient to his responsibilities each member of the team which cares for patients with surgical problems. Details relating to genitourinary surgery, maxillofacial surgery, neurosurgery, orthopedic surgery, and thoracic surgery have purposely not been emphasized. This text has been constructed for quick reference. The four major sections covered are (1) General Policy and Reports, (2) General Procedure, (3) Basic Care in Specific Operations, and (4) Miscellany.

Gestation. Trans. Fifth Josiah Macy, Jr., Found. Conf., March 11, 12, 13, 1958, Princeton, N.J. Edited by CLAUDE A. VILLEE, with 26 participants. New York: Josiah Macy, Jr., Found., 1959. 247 pp. $5.75.

The four principal papers presented are The Biology of the Placenta by Emmanuel C. Amoroso; Circulation in the Placenta by Elizabeth M. Ramsey; Venous Drainage from the Uterus by Josef Bieniarz; and Genetic Factors in Prolonged Gestation in Holstein-Friesian Cattle by Louis W. Holm.

The Healthy Child—His Physical, Psychological, and Social Development. Edited by HAROLD C. STUART and DANE G. PRUGH with 20 contributors. Cambridge: Harvard University Press, 1960. 495 pp. $10.00.

The publication of this book is the culmination of a number of years' consideration by a group of physicians, psychologists, social workers, educators, and nutritionists, of current knowledge and theory of the physical, emotional, intellectual, and social development of children and youth and its presentation in a way that should be useful to all professional persons working with families and children. The chapters are an extension and rearrangement of the materials used in large part by the authors in a series of Institutes on Child Growth and Development offered by the Department of Maternal and Child Health of the Harvard School of Public Health to workers in state public health programs. The range of disciplines and occupational experience represented by the contributors makes possible the presentation of a broad

view of the child and his needs at all stages. Written to increase the understanding of general principles and their application, the contributions include discussions of maternal health and nutrition during pregnancy and their relation to the fetus and the infant, physical growth and development, psychological and social development, educational progress, nutrition, and the general aspects of illness and immunity by age periods. In the concluding chapter, these basic aspects of child development are related to the organization of material and child health services in different kinds of communities.

Tumors of Childhood. By HAROLD W. DARGEON. New York: Paul B. Hoeber, Inc., 1960. 454 pp. $20.00.

While there is a voluminous literature on neoplasms for the surgeon, the radiologist, and the pathologist, there is no comprehensive textbook from the viewpoint of the pediatrician. Preparation of this book was undertaken in an effort to fill this need. Its purpose is to present the subject of juvenile tumors from the standpoint of the clinician. The observations are those of a practitioner and are based chiefly on personal experience. The method of presentation is similar to that of a postgraduate course. In Part I the disease is defined, historical data are presented, and basic information is provided concerning the etiology, genesis, classification, incidence, varieties, and sites of the disease. In addition, general principles and facts pertaining to diagnosis, clinical course, treatment, and prognosis of childhood neoplastic disease are discussed. In Part II, the larger portion of the book, specific tumors are dealt with. The majority are presented under the anatomic site in which they most commonly occur. The information is organized under headings corresponding closely to the subjects covered broadly in Part I. The uniform organization throughout is intended not only to provide a comprehensive work of information but to facilitate the search for any single fact. The clinical features of the common tumors of childhood have been accented, particularly with respect to the natural history, diagnosis, and differential diagnosis. The various methods of treatment are evaluated and summarized, the prognosis indicated, and the results appraised. Details of chemotherapy and radiotherapy for neoplasms that occur predominantly or with relative frequency in children are given. Dosages are provided for childhood tumors commonly treated with radiotherapy. Also presented are certain details of therapies for childhood tumors in which conspicuous advances have been made recently. General measures that must be stressed in the surgical treatment of juvenile tumors are discussed in Chapter 3 on Management. Although the text intentionally accents the clinical side of these diseases, the reader is made aware of excellent publications on research, pathology, radiology, surgery, and endocrinology.

Fundamental Aspects of Normal and Malignant Growth. Edited by WIKTOR W. NOWINSKI with 14 contributors. New York: D. Van Nostrand Company, Inc., 1960. 972 pp. $37.50.

The purpose of this book, written by prominent specialists, is to provide an introduction into the various aspects of the growth problem, a kind of stepping stone from which—on the basis of ample references—the reader will be able to go deeper into details of the problems in which he is particularly interested. It is the author's hope that this book will be of interest not only to the biologist who works principally in other fields, but also to all those interested in cancer research and who look for an up-to-date survey of the results in basic cancer research and allied fields. A new feature is included in this book: Because morphological growth problems are becoming increasingly bound up with biochemistry, which is manifested in practically every chapter, the book starts with a comprehensive summary of intermediary metabolism, written by Dr. S. Kit. This is followed by a chapter on Principles and Theory of Growth, which in turn is followed by chapters dealing with more specific mechanisms.

Arthritis and Allied Conditions. A Textbook of Rheumatology. Edited by JOSEPH LEE HOLLANDER with 30 contributors. 6th ed. Philadelphia: Lea and Febiger, 1960. 1285 pp., 417 illustrations. $20.00.

This whole volume of a well known work has been completely revised and is, for all practical purposes, a new book. There are nineteen entirely new chapters and sixteen other chapters entirely reorganized and rewritten, in many cases by new contributors, at the request of, or with full approval of, the previous author. In planning this 6th edition the effort has been made to

obtain an outstandingly competent contributor on each subject, not necessarily chosen for the neutrality of his point of view. The arrangement of this edition reflects the present concept of rheumatology. First there is a section covering much of the basic knowledge needed for adequate comprehension of rheumatic diseases. The center, or core, is rheumatoid arthritis—the most common, serious, crippling disease of all. The study of the comprehensive management of rheumatoid arthritis comprises two large parts of this book. Because of the tremendous segment of knowledge covered, the editor enlisted the aid of section editors with particular experience, who have checked the accuracy, completeness, compatibility, and coherence of the material in each section. This has made for better coordination of the entire volume and has provided a triple check on the content by contributor, section editor, and editor. All the editors are also contributors. Conversely, practically all the contributors are also editors, since they started from material already in the previous editions or from other literature. While this volume presents a comprehensive view of rheumatology, it is not written only for the rheumatologist, but also as a source of information for researchers, internists, orthopedic surgeons, and particularly graduate students of medicine.

Clinical Physiology—Volume I. By KATHLEEN E. ROBERTS. San Francisco: Filmer Publishing Company, 1960. 215 pp. $6.50.

This volume, comprising twenty chapters, is concerned with the discussion of the normal physiology of electrolytes, changes in disease, and the treatment of abnormalities. The subjects covered are electrolyte balance, water metabolism, renal function, gastrointestinal function, and hepatic failure. It is an over-simplification of the subject and essentially based on the clinical application of basic physiology. The text is written with the view that the diagnosis and treatment of pathological abnormalities should issue from and be based on a knowledge of normal function. This text is not intended for the specialist on the subject, but attempts to bring fundamentals within the reach and understanding of students and those who are novices in the field. Rigid rules and therapeutic outlines have been avoided. Rather, it is hoped that a grasp of the fundamental principles outlined here will enable the clinician to understand electrolyte balance, and to devise an individual approach for his own patient which will allow the complications and nontextbook cases to be handled more intelligently.

An Introduction to Pharmacology. By J. J. LEWIS. Baltimore: Williams & Wilkins Company, 1960. 746 pp. $11.00.

This book has been written with the object of giving a scientific treatment to the elements of pharmacology. It is not intended to be a textbook of materia medica or therapeutics and does not therefore describe the treatment of disease by means of drugs but as far as is possible concentrates upon site, mode, and type of action, and pays some attention to chemical structure—action relationships. An attempt has been made in this text to present the subject in an interesting manner and to leave out much of the detail which can be obtained from more advanced and comprehensive works.

Science and Medicine of Exercise and Sports. Edited by WARREN R. JOHNSON with 42 contributors. New York: Harper and Brothers, 1960. 725 pp. $12.00.

The purpose of this book, in the words of the editor, is to provide an analysis of the status of knowledge related to exercise and sports. It should help serious students to acquire a more effective grasp of the extremely diversified research activity which bears upon these subjects. It should guide professional workers at all levels in their efforts to make an honest statement as to the effects of exercise and sports upon the human organism. It should help researchers in the various areas to know more about "what is going on in the lab next door." And it should serve as a starting point for further research by indicating the frontier of knowledge, suggesting needed research, and providing a useful bibliography. The 42 contributors are all top authorities and well known in their fields of physiology, physical education, psychology, and medicine.

The Head, Neck, and Trunk. Muscles and Motor Points. By DANIEL P. QUIRING. Edited by JOHN H. WARFEL. 2d ed. Philadelphia: Lea and Febiger, 1960. 119 pp. 109 engravings. $3.25.

The revision of this edition was undertaken in the same manner as that of the companion volume "The Extremeties." The format of the

book, as originally conceived by Dr. Quiring, remains relatively unchanged. All references have been corrected to the newest additions of Gray and Cunningham. Terminology has been corrected to the Nomina Anatomica. Four of the original plates have been redrawn, and four new plates have been added for completeness.

Neuropharmacology. Trans. Fifth Josiah Macy, Jr., Found. Conference, May 27, 28 and 29, 1959, Princeton, New Jersey. Edited by HAROLD A. ABRAMSON. New York: The Josiah Macy, Jr. Foundation, 1960. 240 pp. $6.00.

The four original papers and their authors were as follows: Amine Metabolism and Its Pharmacological Implications by Sidney Udenfriend; Central Action of Chlorpromazine and Resperine by Keith F. and Eva K. Killam; Physiological Fractionation of the Effect of Serotonin on Evoked Potentials by Werner P. Koella; Biochemical Sites of Action of Psychotropic Drugs by Bernard B. Brodie.

Manual of Blood Morphology. By LYDIA SCHUDEL. 9th ed. Philadelphia: J. B. Lippincott Company, 1960. 53 pp. $4.50.

This manual has now been in use for over 22 years. The illustrations, text, and nomenclature have been brought up-to-date according to modern viewpoint.

Handbook of Medical Treatment. Edited by MILTON J. CHATTON, SHELDON MARGEN, and HENRY BRAINERD with 11 contributors. 7th ed. Los Altos, California: Lange Medical Publications, 1960. 546 pp. $3.50.

The first edition of this familiar pocket-sized handbook of medical treatment appeared in 1949, and the successive editions every 2 years since that time have proved increasingly popular. The authors are cognizant of certain intrinsic defects of the outline manner of presentation but feel that such a method is necessary to tie together the vast amounts of information to which the medical student and practitioner are exposed. This book is not intended to replace the more complete texts and references on clinical therapeutics, but rather to provide a readily accessible source of material for everyday use. Several sections of the text have been rather extensively revised and expanded. Deletion of outmoded material has permitted a continued utilization of the convenient handbook form.

Physician's Handbook. By MARCUS A. KRUPP, NORMAN J. SWETT, ERNEST JAWETZ, and CHARLES D. ARMSTRONG. 11th ed. Los Altos, California: Lange Medical Publications, 1960. 527 pp. $3.50.

The *Physician's Handbook* is essentially a compilation in convenient pocket-size format of those diagnostic and therapeutic facts and procedures which the authors feel to be of greatest daily interest and value to the student and practitioner of medicine. For the 11th edition the Handbook has been thoroughly reorganized and revised. Two new chapters have been added on Emergency Medical Examination and Chemical Analysis of Blood and Body Fluids. The index has been expanded, and all sections have been brought up-to-date with current clinical concepts and practices.

Manual for Examination of Patients. Chicago: The Year Book Publishers, Inc., 1960. 205 pp. $4.50.

This manual was prepared and edited by an interdepartmental committee of the faculty for the use of students, house officers, and staff of the University of North Carolina School of Medicine and the North Carolina Memorial Hospital. It reflects a general philosophy of patient care and describes the most important aspects of interviewing and physical examination and the principal laboratory procedures utilized. It attempts to satisfy two unmet needs: (1) the singular paucity of material in the text books of physical diagnosis on interviewing and history taking, probably the most important components of the diagnostic process, and (2) the need to integrate certain important parameters of advanced knowledge in psychiatry, preventive medicine, and the behavioral sciences to the broad stream of contemporary "medicine." An attempt has been made to broaden the scope so as to make it applicable to all clinical services.

Aids to Biochemistry. By S. P. DATTA and J. H. OTTAWAY. 5th ed. Baltimore: Williams & Wilkins Company, 1960. 249 pp. $3.75.

The material of this book, which has been entirely rewritten for this edition, is based on the course in biochemistry for preclinical medical students at University College, London. It is believed to adequately cover the teaching in most other modern preclinical schools. It deals essentially with human biochemistry, and little

mention is made of comparative biochemistry of animals or of microorganisms or plants. Although the book is intended primarily for the clinical medical students, an effort has been made to make it useful to more advanced students of medicine or of the medical specialties who need to refresh their biochemical knowledge.

P-Q-R-S-T. A Guide to Electrocardiogram Interpretation. By JOSEPH E. F. RISEMAN. 4th ed. New York: The Macmillan Company, 1960. 168 pp. $6.50.

This book is planned for the beginner in electrocardiographic interpretation. It is intended to be used as a practical guide during the actual or "bedside" examination of electrocardiographic tracings. It is not intended to replace the standard textbooks of electrocardiography, but rather to supplement them and to increase their value. The booklet is arranged to help the beginner examine an unknown tracing step by step and, with the aid of common sense and logical reasoning, arrive at the correct electrocardiographic diagnosis in most instances. Furthermore, it is condensed to pocket size so that it can be carried to the bedside if desired. This booklet aims to minimize three of the following four difficulties encountered by the beginner: (1) lack of knowledge; (2) lack of a logical, step-by-step method for interpretation of each tracing; (3) lack of recognition of the value and especially of the limitations of electrocardiography; and (4) lack of experience.

Psychophysiologic Approach in Medical Practice. By WILLIAM W. SCHOTTSTAEDT. Chicago: The Year Book Publishers, Inc., 1960. 342 pp. $8.00.

This book is written primarily for medical students, interns, residents, and practicing physicians who are interested in psychophysiologic phenomena but who do not expect to have formal psychiatric training. The first aim of the author has been to provide a framework of concepts into which additional facts and ideas could subsequently be placed as understanding of human behavior and its relation to health and disease increases. The second aim has been to develop from these concepts and ideas a sound basis for treating ailments associated with emotional disturbances. Half of the book is devoted to a presentation of background material essential for a comprehensive understanding of human behavior and psychophysiologic interrelationships. The second half of the book discusses the practical implications of this material for treatment. It is not a manual of practical psychiatry, nor is it expected that what is presented will be adequate for the handling of psychiatric entities.

The Psychological Report. Use and Communication of Psychological Findings. By WALTER G. KLOPFER. New York: Grune and Stratton, 1960. 142 pp. $4.50.

This book is written primarily for the clinical psychologist. It constitutes a distillation of all that can be learned about a person by using psychological tools, as predicated upon present theories and working hypotheses. It is a primary document of psychology as a science, of its methods of study, and is a personal document of the author.

Scientific Papers and Discussions. Division Meeting, Midwest Area District Branches, American Psychiatric Association, Detroit, Michigan, October 29–31, 1959. Edited by JACQUES S. GOTTLIEB and GARFIELD TOURNEY. Washington, D.C.: American Psychiatric Association. 328 pp. $3.00.

This is the first of what is hoped to be a long series of publications of the Proceedings of the Divisional Meetings of the American Psychiatric Association. These divisional meetings are designed to develop the best investigative work being conducted in that particular area. The program of this Detroit divisional meeting was centered around the theme of "New Horizons in Psychiatry."

The Search for New Antibiotics. Problems and Perspectives. By G. F. GAUSE. New Haven: Yale University Press, 1960. 94 pp. $4.75.

The author is Director of the Institute of Antibiotics of the Academy of Medical Sciences, Moscow, U.S.S.R. The book is based on a "Trend in Science" lecture sponsored by the Yale University Chapter of Sigma Xi and delivered in December, 1959.

Medical Research and the Death Penalty—A Dialogue. By JACK KEVORKIAN. New York: Vantage Press, 1960. 75 pp. $2.50.

The explosive issue discussed in this small book is this: Should the condemned man be al-

lowed the choice of submitting to anesthesia and medical experimentation, as a form of execution, in lieu of conventional methods now prescribed by law? The author, a proponent, has been unable to generate an active public debate on this question and uses this book as his only recourse to present such a debate as it would undoubtedly take place. He proposes the reader act as judge and jury. A sincere attempt has been made to present both points of view.

The Nature of Science. By DAVID GREENWOOD. New York: Philosophical Library, 1960. 91 pp. $3.75.

This book is intended as a collection of essays in the general area of logic and mathematics as applied to science. The emphasis throughout is on the linguistic aspects of science and mathematics and should be of particular interest to those who, though not scientists themselves, are concerned with the application of the most recent theories of syntax and semantics to the language of modern science.

The Story of Chemistry. By GEORGE LOCKEMANN. New York: Philosophical Library, 1960. 264 pp. $4.75.

The author is one of Germany's leading organic chemists. In the rapidly advancing field of chemistry many of the earlier histories are obsolete. In this book new light is thrown on early chemistry in Egypt and its beginnings in Greece, as well as upon Arabic chemistry.

Friedrich Nietzsche—Fighter for Freedom. By RUDOLF STEINER. Englewood, New Jersey: Rudolf Steiner Publications, Inc., 1960. 212 pp. $4.75.

American readers have known the writings of Friedrich Nietzsche in English for almost 50 years. In the present work an attempt is made to provide an insight into Nietzsche's work, his character, and his fundamental ideas in the light of psychopathology and psychotherapy.

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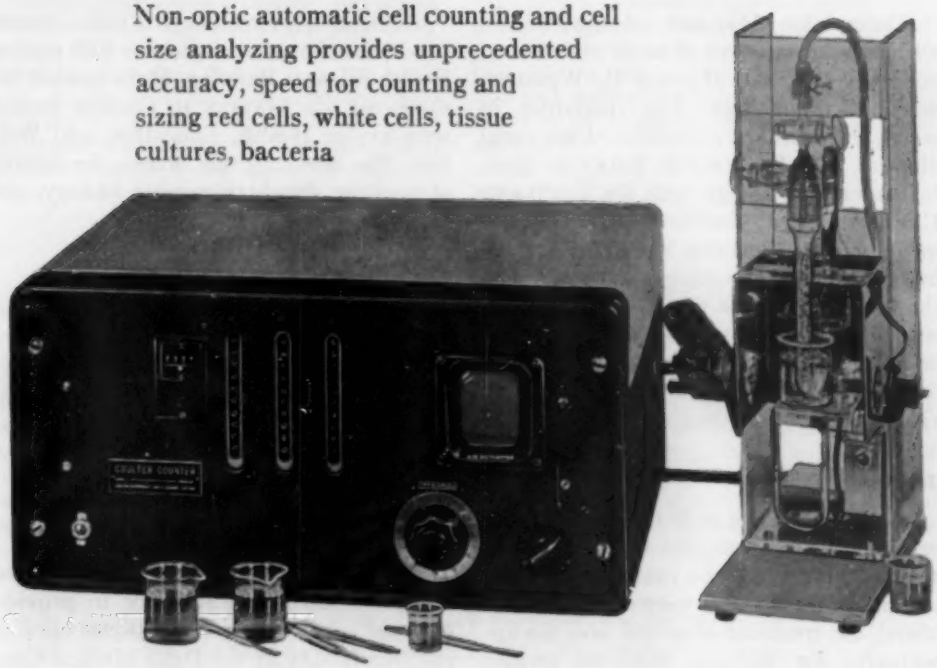

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NEWS FROM THE MEDICAL SCHOOLS

Albany

The creation of two new sub-departments within the department of medicine has been announced by Dr. HAROLD C. WIGGERS, dean of the college. The specialties in which the units were established are renal diseases, with Dr. JOHN E. KILEY as director, and rheumatology, with Dr. CURTLAND C. BROWN, Jr., as director. The new departments will also function as such in the Albany Hospital. According to Dr. Wiggers, the formation of the two sub-departments was done "in recognition of the growing need in northeastern New York for expert teaching research and care in the fields of kidney illnesses, rheumatism and arthritis."

Bowman Gray

With the addition of 20 full-time and five part-time instructors to the faculty of medicine, and with the completion of the new five-story research wing of the medical school, the freshman class will find the opportunity for studying medicine greater than that encountered by any beginning group in the school's history, according to the school's dean, Dr. C. C. CARPENTER. Dr. Carpenter reported that an active recruitment program is under way for a number of other budgeted faculty positions including five full-time persons in the basic medical sciences (biochemistry and pharmacology) and four full-time clinical faculty additions. A new 80-seat classroom will be available for the first time as will new student laboratory facilities for teaching pathology, microbiology and clinical laboratory methods.

Dr. RICHARD C. PROCTOR has been named chairman of the department of psychiatry. Dr. Proctor has been a member of the faculty since 1950.

Buffalo

Dedication ceremonies were held September 10 for the university's new $2.5 million Health Sciences Building. Main speaker for the event was MARIAN B. FOLSOM, former secretary of Health, Education, and Welfare. The new structure houses the schools of medicine, dentistry, nursing, biology, and pharmacy.

Creighton

Dr. R. DALE SMITH has been appointed assistant dean of the Creighton University School of Medicine. Dr. Smith has been acting assistant dean for the past year. He will continue to serve as chairman of the department of anatomy, a post he has held since joining the Creighton faculty in 1950.

Duke

The Public Health Service has awarded $765,000 to Duke University to provide half the cost of a new $1,530,000 clinical research facility at the Duke Medical Center. The addition will provide more space and better facilities for clinical research activities which are concerned directly with observation and treatment of disease in hospital patients, as contrasted with laboratory experimental work, said Dr. DERYL HART, Duke President. Plans call for the clinical research facility to occupy one of three parts of a new building to be erected some 250 feet northwest of the present emergency entrance to Duke Hospital. The other two units will be occupied by the university's Center for the Study of Aging and a Diagnostic and Treatment Center.

A new radiation therapy and research division has just been completed at the Medical Center and is now in use. Providing extensive facilities for radiation treatment

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10th Edition Bard MEDICAL PHYSIOLOGY

There is good reason why a significant number of medical schools throughout the U.S. and Canada added the 10th edition of Bard, MEDICAL PHYSIOLOGY to their recommended or required reading lists or increased their earlier purchases of this text during the past spring semester. Many more medical educators have proved for themselves that its long-time popularity and use in so many classrooms is good reason for re-examining this text in the light of their present curriculums. These educators have discovered that this book's excellent pedagogical approach and its broad, better balanced presentation of physiology make it one of the best textbooks they can recommend to their students. They have recognized with approval the value of its modern biochemical approach and its complete bibliography. Although it is a large and comprehensive volume, they have chosen this book because their students like its easy-to-read style and the way in which it clarifies the application of physiology to the clinical practice of medicine.

Edited by PHILIP BARD, Professor of Physiology, School of Medicine, The Johns Hopkins University. With 13 collaborators. 1956, 10th edition, 1421 pages, 6¾" × 9¾", 438 illustrations, 5 in color. Price, $14.00.

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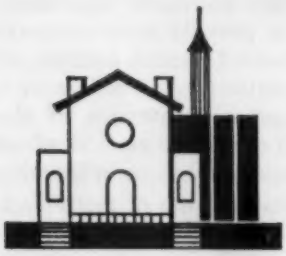
If you agree with the experienced teachers who authored this new Mosby textbook that the fundamental objective of a modern course in "Physical Diagnosis" is to teach the student how to obtain a good history and to perform a systematic physical examination, you may find that this book more than adequately fulfills your textbook requirements. Written with a realistic approach to the problems which confront the medical student facing for the first time the many challenging and bewildering clinical problems of a practicing physician, this book is the only text which provides the student with all of the following essential information: (1) It devotes particular attention to the student's approach to his patient. (2) It profusely illustrates with diagrams and photographs the techniques of the physical examination. (3) It eliminates eponyms, yet aids student in achieving fluency in medical communication. (4) It provides a detailed review of body systems and helps the student learn new clinical terms.

By JOHN A. PRIOR, M.D., Professor of Medicine, Ohio State University, College of Medicine, Columbus, Ohio; and JACK S. SILBERSTEIN, M.D., Clinical Associate Professor of Medicine, Ohio State University, College of Medicine, Columbus, Ohio; and 8 contributors. 1959, 388 pages, 6¾" × 9¾", 193 illustrations. Price, $7.50.

5th Edition Kleiner-Orten HUMAN BIOCHEMISTRY

The 5th edition of HUMAN BIOCHEMISTRY presents the latest discoveries of biochemistry as an integral part of the clinical practice of medicine without usurping the clinician's domain and without neglecting fundamentals. For example, the important chapters on metabolism and the one on blood have been completely rewritten, and large parts of the vitamin, hormone and other chapters have been extensively revised.

By ISRAEL S. KLEINER, Ph.D., Professor and Director of the Department of Biochemistry, New York Medical College, Flower and Fifth Avenue Hospitals; and JAMES M. ORTEN, Ph.D., Professor of Physiological Chemistry, Wayne State University College of Medicine, Detroit, Mich. 1958, 5th edition, 808 pages, 6½" × 9½", 94 text illustrations, 5 color plates. Price, $9.00.



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of cancer, the division is housed in a $375,000 addition to Duke Hospital that has been under construction for the past year. The radiation therapy division is part of the Center's department of radiology headed by Dr. ROBERT J. REEVES.

Georgetown

The promotions of Dr. WALTER C. HESS to associate dean of the university's schools of medicine and dentistry, and Dr. BRUCE SHNIDER to assistant dean of the School of Medicine, were announced recently by the Very Rev. EDWARD B. BUNN, S.J., president of the university. Father Bunn also announced the appointment of Dr. CUTTING B. FAVOUR as professor and chairman of the department of preventive medicine, and associate professor of medicine. Dr. Favour comes to Georgetown from the Palo Alto Medical Research Foundation where he has been Director of the department of immunology.

Dr. Hess has been professor of biochemistry and assistant dean for research at the Medical Center and Dr. Shnider has been assistant professor of medicine.

Indiana

ARTHUR D. LAUTSENHEISER has been named assistant dean of the Indiana University School of Medicine. He has been senior administrative assistant to Dean JOHN D. VANNUYS since 1956. The new assistant dean started on the Bloomington campus as an accountant in the business office and then as chief accountant at the Medicine Center in Indianapolis.

Dr. JAMES E. ASHMORE, a former member of the Harvard Medical School faculty who became associate professor of biochemistry at the Indiana University School of Medicine two years ago, has been appointed chairman of the department of pharmacology. Dr. Ashmore will continue teaching and research studies in diabetes and cancer.

Louisiana

Five years ago the LSU School of Medicine started a teaching and research program in Central America and the Caribbean area, financed by a Public Health Service grant. Because of its growing importance, the school has established a department of tropical medicine and medical parasitology "to handle future expansion," said the school's Dean and Vice-President, Dr. WILLIAM W. FRYE. "Teaching and research leading to the control of tropical diseases is now of prime medical importance in a world of new frontiers where geographic boundaries may no longer be defined," Dr. Frye said.

Named professor and head of the new department is Dr. J. CLYDE SWARTZWELDER, who has been professor of parasitology in the department of microbiology since 1950.

Louisville

Dr. FRANK M. GAINES, Jr., former State Commissioner of Mental Health, has been named assistant dean of the Medical School. Dr. Gaines will continue as associate professor of psychiatry and mental health, a post he has held at the Medical School since 1946. The assistant deanship is a new post at the Medical School. Dr. Gaines will be in charge of student affairs, which covers admissions, promotions, student counselling and loans and scholarships. He has served as director of admissions at the school since the fall of 1959.

Maryland

The Public Health Service has approved a grant of $795,350 to the School of Medicine, which will double its research program in the basic medical sciences. To be matched by an equal amount of money from the Maryland General Assembly, the funds will enable renovation work to be undertaken on a former Baltimore department store building to provide more adequate quarters and expanded research facilities for the medical departments. According to a university spokesman, conversion of the building also will enable the medical school to employ a different technique in teaching the basic sciences—the use of multi-disci-

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Mayo Foundation

Dr. FORDYCE R. HEILMAN, head of the section of bacteriology of the Mayo Clinic since October 1944, and professor of bacteriology in the Mayo Foundation, Graduate School, died at his home in Rochester, August 15. Well known in the field of bacteriology, Dr. Heilman started his teaching career at the Graduate School in 1939 as an instructor and through subsequent promotions, was appointed professor of bacteriology in 1946.

Medical Evangelists

Dr. ROBERT FISHER CHINNOCK, professor and chairman of the department of pediatrics, has accepted a promotion to the position of Chief Physician of Children's Division at the Los Angeles County General Hospital. He was formerly a senior attending physician there. Dr. Chinnock received his M.D. degree from CME in 1944 and has been on the teaching staff since 1948.

Michigan

Dr. MYRON E. WEGMAN, former Secretary-General of the Pan American Sanitary Bureau and of the World Health Organization Regional Office for the Americas, was named Dean of the School of Public Health at the University of Michigan Sept. 1. He succeeds Dean HENRY F. VAUGHAN, who retired a year ago.

Dr. Wegman has served in his present capacity since 1957. He had the major operating and administrative responsibility for coordination of public health activities in 22 Latin American countries.

Minnesota

A major curriculum change that gives junior and senior medical students greater responsibility for outpatient care at University Hospitals is under way at the University of Minnesota Medical School. Under careful supervision, 54 students entering the junior-senior period are now responsible for the total care of outpatients assigned to them from the Adult Medical Admission Clinic, the Pediatrics Admissions Clinic, and North Clinic. Director of the Comprehensive Clinic program is Dr. RICHARD M. MAGRAW, assistant dean and associate professor of psychiatry and internal medicine. DR. WARREN C. WARWICK is assistant director of the new program and director of the Pediatrics Clinic. Dr. JAMES C. AREY, Jr., former curriculum coordinator, assisted in drafting the program.

Each student will be assigned to the program for a six-month period, during which he will treat from 40 to 60 patients. Under supervision, he will integrate all aspects of the outpatient's care and be responsible for the care that he himself will provide. He will retain this responsibility for the patient until discharge or hospitalization.

Mississippi

The State College Board recently accepted "with regret" the resignation of Dr. DAVID S. PANKRATZ as Dean of the University Medical School and Director of the University Medical Center. Dr. Pankratz, who will become associated with a new neuropsychiatric clinic in Memphis, Tenn., will complete 21 years' service with the university next February, when his resignation becomes effective. He has served as Dean since the mid 1940's.

The medical center, opened in 1955, has made remarkable progress under Pankratz in its five years' existence. In that five years the student body has tripled, the patient load and faculty have doubled, research grants have soared from $25,000 to $800,000 per year, and physical facilities have been greatly increased. Three student apartment buildings and a nurses' dormitory have just been completed and construction is under way on a $3 million research wing.

Six new faculty appointments have been announced by the School of Medicine; five in newly-filled teaching positions and one to fill a vacancy left by a resignation.

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sistant professor of obstetrics-gynecology, taught at Louisiana State University for three years before completing a residency in pathology at Oklahoma University this year. Dr. PETER CERVONI, assistant professor of pharmacology, last year did postdoctoral research at Downstate Medical Center in New York. Dr. FREDERICK L. MCGUIRE was named assistant professor of psychiatry. New assistant professor of neurosurgery and anatomy is Dr. ERVIN W. POWELL, who comes to the Medical Center from Creighton University. New instructors are Dr. JOHN A. GRONVALL, pathology; Dr. FORREST T. TUTOR, neurosurgery.

New York University

A three-year study aimed at developing methods for minimizing the lethal and deforming effects of burns will be undertaken at a new center for research in burn therapy to be established at the University Hospital of the New York University Medical Center. Financed by a grant of $332,571 from the John A. Hartford Foundation, Inc., the research center will serve three major purposes: to study methods of reducing the number of deaths and crippling deformities resulting from severe burns; to perform research in shock treatment, infection, control, nutrition, tissue transplantation and wound healing; and to train specialists, medical students and surgical residents in burn treatment and long-term reconstructive surgical care.

Three NYU School of Medicine department chairmen will act as consultants to the center: Dr. JOHN H. MULHOLLAND, surgery, Dr. LEWIS THOMAS, medicine, and Dr. ROBERT S. HOTCHKISS, urology.

North Carolina

Dr. CHARLES H. BURNETT, head of the department of medicine, has been granted a year's leave of absence for research work at the University of London. While abroad, he will attend a number of professional meetings in England and in Europe and inspect hospitals and clinics in those areas.

Northwestern

Dr. AUGUSTA WEBSTER can claim to be the first woman in Northwestern Medical School's history to become a full professor. Dr. Webster was recently named professor of obstetrics and gynecology. A member of Northwestern's faculty for many years, she is also chairman of the department of obstetrics at Cook County Hospital, Chicago.

Oregon

The City Building Department of Portland recently issued a $2,225,000 permit for a nine-story medical research laboratory building at the Medical School. The structure will house an estimated 100 or more research projects.

Pennsylvania

Five University of Pennsylvania doctors have volunteered for service in Morocco as members of an international Red Cross team treating the 10,000 paralyzed victims of adulterated cooking oil. Each doctor will act as delegate and medical advisor for the League of Red Cross Societies, which has been carrying on a rehabilitation program for the victims since they were stricken last fall. The American Red Cross will provide travel expenses and MEDICO will provide funds for living expenses. Taking part in the project will be: Dr. WILMER M. ANDERSON, Dr. WILLIAM J. ERDMAN, Dr. ALBERT A. MARTUCCI, Dr. DAVID G. YOUNG, and Dr. IGHO H. KORNBLUEH.

Dr. JOHANNES IPSEN has been appointed professor of epidemiology and medical statistics. The Danish-born physician comes to Pennsylvania from the Harvard University School of Public Health where he was associate professor of public health. He also held the post of director of the Institute of Laboratories of the Commonwelalth of Massachusetts.

South Carolina

After 50 years of service in the medical profession, Dr. KENNETH M. LYNCH has re-

Apprenticeship in 1830

The necessary daily work was dull, and at times tedious and apparently useless. One had to be in the surgery from about 9 to 1, and again (I think) from 2 or 3 till 5 or 6, every day; and there one's time was chiefly occupied in dispensing, seeing a few outpatients, as they might be called, of the poorer classes, in receiving messages, making appointments, keeping accounts, and at Christmas-time making out bills, and for some, receiving payment. When the master came in from his round of visits, one had to write, at his dictation, for each day—Die Lunea, Die Martis, Die Jovis, or whatever God it might be—the name of each patient he had seen, the fact of the "Visitatio," and the prescriptions for the medicine required. Then these were to be made up and sent; the bottles to be neatly corked and covered; the pills to be duly rolled and smoothly rounded (no silvering then); the leeches to be put in their boxes with scarcely struggling room; and all to look as neat as any druggist's shop. And from this book were duly entered in another the supplies of time and physic, and the cost of each for each patient.

—Sir James Paget (1814-1899): Memoirs and Letters, edited by Stephen Paget, London, 1901, pp. 20-21.

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tired as president of the Medical College of South Carolina and has been appointed chancellor.

Following graduation from the University of Texas, and a term on the pathology staff of the Philadelphia General Hospital and the University of Pennsylvania, Dr. Lynch was appointed professor of pathology at South Carolina in 1913. He became president of the Medical College in 1943.

South Carolina Medical College officials were notified recently of approval of a $498,283 grant for a $1 million medical research building by the Public Health Service. Dr. JOHN T. CUTTINO, president of the college, said the approval means immediate launching of plans for the research building which is expected to cost $996,556. The building will house a research center covering almost the entire field of scientific medicine but concentration will be placed on heart diseases and cancer. Site of the building is expected to be adjacent to the Medical College Hospital.

South Dakota

Grants totalling $17,498 have been received by the Medical School for equipping the new research wing now under construction. The two grants, of $12,498 and $5,000 were allocated by the Public Health Service and the National Science Foundation, respectively, on a matching basis.

The research wing is expected to be completed by the spring of 1961.

S.U.N.Y. Brooklyn

The Downstate Medical Center has announced the appointment of Dr. RUDOLF THEODOOR VAN DAM of Amsterdam University, Holland, as visiting professor of physiology for 1960–61. He succeeds Dr. David R. Curtis, of the Australian National University, who has been visiting professor since Sept. 1, 1959. An authority on heart diseases, Dr. van Dam received his M.D. degree from Amsterdam University in 1955.

The Graduate Educational Program of the Medical Center is offering a two-year program of research training in psychiatry leading to the degree of Doctor of Medical Science. The program is open to M.D.'s who have completed three years of residency training in psychiatry. Candidates will also be accepted after two years of residency training. In such cases, the final year of residency will be taken at the Psychiatric Division of Kings County Hospital, concurrently with this program; and a total of three years will be required to complete the combination of the two-year research training program and the third year of residency. Each candidate who is accepted will be granted a fellowship of $7,500 for the first post-residency year and $8,000 for the second. Three-year candidates will, in addition, receive $7,100 for the final residency year. For further information, write to: Office of Admission, Downstate Medical Center, 450 Clarkson Ave., Brooklyn 3, N.Y.

S.U.N.Y. Syracuse

Dr. JAMES B. WRAY, former instructor in orthopedic surgery at Bowman Gray School of Medicine, has accepted the position of chairman of the section on orthopedic surgery at the Upstate Medical Center. He will also serve as chief of the orthopedic service at the Upstate Medical Center Hospitals.

Site preparation for the new State University of New York Teaching and Research Hospital will be completed this fall, according to a university spokesman. When the new hospital is completed, it will be one of the largest single buildings in New York State outside the metropolitan area. It will be equipped to offer highly specialized care to the people of Upstate New York, who in the past had to travel to more distant medical centers, said university officials.

West Virginia

Formal dedication on October 8 of the Teaching Hospital at West Virginia University marked a new era for the School. On opening day of the hospital, the first 65 patients were admitted and more and more

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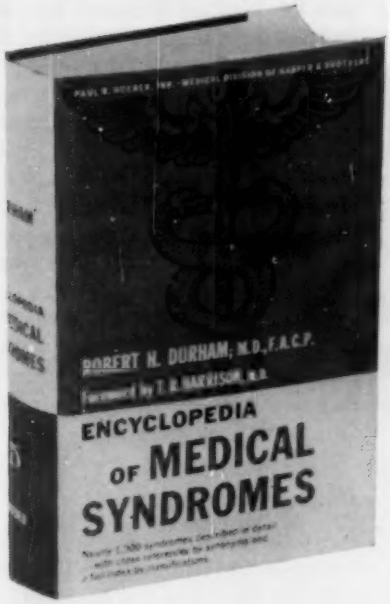

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By ROBERT H. DURHAM, M.D., F.A.C.P., *Physician-in-Charge, Division of General Medicine, Henry Ford Hospital. Foreword by* TINSLEY R. HARRISON, M.D.

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will enter until eventually in July 1961, the entire 522 beds are scheduled for occupancy.

Included in the expansion of the Medical Center, is a new Basic Sciences Building housing classrooms, laboratories, and offices of the Schools of Medicine, Dentistry, and Pharmacy. The fourth school, Nursing, opens this fall coincident with inception of the four-year medical curriculum. The first Doctor of Medicine degrees to be conferred in the State of West Virginia will be granted by the university in 1962.

Dr. HAROLD I. AMORY, former chief radiologist at the Beckley Memorial Hospital and director of radiological services for the Miners Memorial Hospital Assn., has been named chairman of the department of radiology at the Medical Center. Dr. Amory served as chief of radiological services at Walter Reed Army Hospital from 1946 until 1953, then assumed similar responsibilities at Letterman Army Hospital, San Francisco. He has been at the Beckley Hospital for the past two years.

A special chair for research in cancers and tumors has been established at the Medical Center. It was made possible by a $16,000 gift from the Charleston Foundation for Medical Research and Education, founded by Dr. G. B. CAPITO, Charleston physician.

The new position will be known as the Charleston Foundation for Research Chair. The foundation plans to give $10,000 annually toward continuing the chair. In announcing the gift, President ELVIS STAHR, Jr., said the chair will be filled by an outstanding scientist, whose duties will include internal coordination of all the cancer and tumor research at the Medical Center, marshaling of support for additional research projects, and organizing symposia and seminars in addition to conducting his own research program.

Woman's Medical

A new building and an increase of 20 per cent in the entering class is the result of the College's $3 million campaign to build a research wing that would complement the College and Hospital. Fifty students have made up the freshman class in the past because of laboratory place. With dedication on October 14 of the new research wing, 60 students will begin their study of medicine.

ITEMS OF CURRENT INTEREST

Congress Ups NIH Budget by 40 Per Cent

Congress voted to appropriate $560 million to the National Institutes of Health for the fiscal year 1961. This represents a 40 per cent increase over the $400 million granted last year. The NIH award was the largest in the over-all appropriation of $1,029,000,000 for the U.S. Public Health Service. Also added to the NIH appropriation was the annual allocation of $30 million for construction of health research facilities. This figure is not included in the NIH budget.

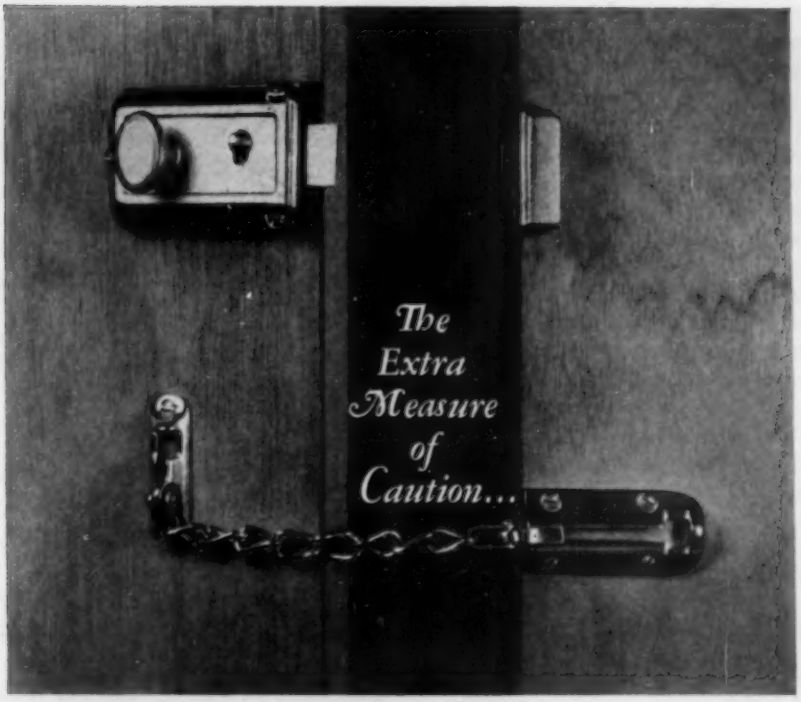
An allocation of $186,200,000 for construction of hospitals under the Hill-Burton program is the same as appropriated last year. The new budget calls for approximately $259 million for research grants—an increase of about $59 million over last year's allocation.

States Sparking Studies for New Medical Schools

Increasing concern about the health needs of the nation has led the states of Maine, New York, New Jersey, and Ohio to appoint committees to study the possibilities of establishing a medical school in their respective areas.

As previously reported in this column, Arizona, California, Idaho, and Montana have studies well under way to examine their medical education needs.

By 1967, the Northern Association for



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Medical Education hopes to open the doors of a new medical school in St. Paul, Minn.

The University of Maine, with the help of the Maine Medical Association, is studying the feasibility of establishing a two-year school in that state. Two locations have been mentioned by the university as possibilities for a school that could be near a sizable hospital. One is at Orono and the other at Portland.

Ohio is not only studying the expansion of facilities for its existing medical schools, but is investigating the possibility of establishing a new medical school.

New efforts to establish a second medical school in New Jersey are following continued warnings of general practitioners to meet the needs of rural and urban areas of the state.

The New York State Legislature has authorized the Nassau County Medical Society to select a five-man commission to study the possibility of establishing a medical school on Long Island.

MEND News

Eleven more medical schools have become affiliated with the MEND Program, thus raising to 82 the total number of schools participating. The new schools are Alabama, Dartmouth, Florida, Georgia, Harvard, Johns Hopkins, Kentucky, St. Louis, South Carolina, SUNY (Downstate) and Seton Hall.

The following four MEND symposia are planned for the academic year 1960–61: "New trends in aerospace medical research"—October 17–19, 1960, at Wright-Patterson Air Force Base, Dayton, Ohio; "Defense against chemical and biological warfare"—December 7–9, 1960, at Walter Reed Army Medical Center, Washington, D.C.; "Submarine medicine and the habitability of confined environments"—April 17–19, 1961, at the U.S. Naval Submarine Base, New London, Conn.; "Organization for emergency health services"—May 15–17, 1961, at the OCDM Instructor Training Center, Manhattan Beach, Brooklyn, N.Y.

Missouri Sets Up Loan Fund for Medical Students

Establishment of a permanent revolving fund to provide loans to assist Missouri students in the nation's medical schools who require financial aid to complete their education was announced recently by the Missouri State Medical Association, which has appropriated an initial $25,000 to launch the program. According to Dr. Raymond O. Muether, president of the state medical association, purpose of the fund is to help assure an increasing supply of physicians for Missouri, particularly in many rural areas where a shortage of doctors now exists. He said the bulk of the loans will be to students at the state's three medical schools at the University of Missouri, Washington University, and St. Louis University.

AHA Honors Four

Formal recognition in the form of Honorary Fellowships were granted to four leaders in the health and education fields by the American College of Hospital Administrators at its 26th Convocation Ceremony held August 28, in San Francisco. They are: Dr. F. J. L. Blasingame, Executive Vice-President of the American Medical Association; Dr. Ward Darley, Executive Director, the Association of American Medical Colleges; Lt. Gen. Leonard D. Heaton, M.D., surgeon general, Department of the Army; and Professor Marshall E. Dimock, Ph.D., Department of Government, New York University.

Government Notes

Department of Health, Education, and Welfare. . . A National Center for Health Statistics has been established in the Public Health Service, announced Surgeon General Leroy E. Burney. The new organization unit brings together the major PHS activities concerned with measurement of the health status of the Nation and identification of significant associations between characteristics of the population and health-related

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problems. Initially it will have two Divisions: the U.S. National Health Survey, which was transferred to it on Aug. 15; and National Office of Vital Statistics, which became part of it on Oct. 1. Dr. Forrest E. Linder is Acting Director of the Center pending formal establishment of the position of Director.

Surgeon General Leroy E. Burney also announced the establishment of four new divisions in the Bureau of State Services of the Public Health Service. The action is the first major move in a Service-wide reorganization designed to strengthen environmental health programs and to streamline the administration of various other programs. The Divisions include: Air Pollution, Occupational Health, Nursing, and Dental Public Health.

Nutrition Board To Hold Exams

The American Board of Nutrition will hold the next examinations for certification as a Specialist in Human Nutrition on April 10, 1961 in Atlantic City. Candidates who wish to be considered for these examinations should forward applications to the Secretary's office not later than March 1. Write Robert E. Shank, M.D., Department of Preventive Medicine, Washington University School of Medicine, Euclid and Kingshighway, St. Louis, Mo.

PERSONNEL EXCHANGE

Faculty Vacancies

BIOSTATISTICIAN: Ph.D. Research in child growth studies; opportunities for varied consultation and teaching at Dental School located in large medical center; modern computing facilities available. Salary, from $9,000 and academic rank dependent upon qualifications. Write to Dr. Bhim Savara, Head of Dept., Child Study Clinic, University of Oregon Dental School, 611 S.W. Campus Drive, Portland 1, Oregon.

PSYCHIATRIST: Full-time academic opportunity for a Board Certified psychiatrist seeking a career in teaching and research in a long established medical school in the Northeast undergoing expansion. Would direct an Out-Patient (adolescent and adult) Psychiatric Clinic team of physicians, psychologists and social workers, and teach groups of senior medical students and psychiatric residents with assistance of eight Board Certified part-time instructors. A limited amount of private practice and consultation work is allowed in addition to salary in the $14,000–$20,000 range; starting figure and academic rank depending upon training and experience. Write to W. L. Holt, Jr., M.D., professor of psychiatry, Albany Medical College, Albany, N.Y.

ANATOMIST: Assistant professor required for teaching gross anatomy. Excellent research opportunities in other branches of anatomy (electron-microscopy, histology, experimental pathology, tissue culture). Salary, $7,300–$8,500 depending on experience and qualifications. Write to R. Altschul, M.D., Department of Anatomy, University of Saskatchewan, Saskatoon, Canada.

ANATOMIST: Medical school in Midwest with excellent research facilities for neurophysiological studies. Teaching assignments in gross and neuroanatomy. Rank and salary dependent upon qualifications. Address: V-94.

MICROBIOLOGIST: The University of Alberta invites applications for the position of assistant professor in the department of medical bacteriology. Candidates should be medically qualified or possess a higher science degree. Experience in medical bacteriology or virology is useful but applicable experience in basic science fields may be as valuable. Teaching and research duties with variable amount of service responsibility depending on nature of appointment. Present salary range $6,000–$8,200. Applications and inquiries which should be accompanied by full curriculum vitae may be sent to the Dean, Faculty of Medicine, the University of Alberta, Edmonton, Alberta, Canada.

BIOCHEMIST: Ph.D., full-time investigation of fundamental aspects of peritonitis plus independent research. Joint academic appointment. Salary dependent upon professional experience. Department of Surgery, Louisiana State University School of Medicine, New Orleans 12, La.

ORTHOPEDIC SURGEON: Professor and head of department of orthopedics required. Full-time position with emphasis on developing research program in East Coast Medical School. Address: V-95.

PEDIATRICIAN: Full-time university appointment. For active teaching program of undergraduates and residents. Interest in teaching general pediatrics and child health; specialized interests also encouraged. Rank and salary commensurate with experience. Mail curriculum vitae to V-96.

PHARMACOLOGIST: Full-time appointment as assistant professor in department of pharmacology, Ph.D or M.D. Salary, $6,000 to $8,500 according to qualifications. Interested candidates should send a complete curriculum vitae and recent photograph to Dr. M. F. Murnaghan, Professor and Head, Department of Pharmacology, University of Ottawa, Ottawa 2, Ontario, Canada.

PSYCHIATRIST: Full-time academic position as instructor or assistant professor in dynamic new department of psychiatry. Opportunities for teaching, research, and clinical experience on inpatient, outpatient, and/or consultation services. Departmental emphasis is on community psychiatry. Must have completed approved residency training. Rank and salary based on qualifications and ability. Write: Dr. James M. A. Weiss, Department of Psychiatry, University of Missouri School of Medicine, Columbia, Mo.

BIOCHEMIST: Qualified Ph.D. needed for department of pathology in Southwestern medical school. Position carries title of assistant professor with an annual salary of $7,600. Work consists of directing clinical chemistry laboratory and setting up microtechniques in affiliated hospital. Also involves assistance in teaching clinical pathology to second-year medical students. Ample opportunity for research. Address: V-97.

INTERNIST: Full-time position available at university affiliated hospital for internist to run research-metabolic unit, conduct own research, and help with teaching house staff and students. Address: V-98.

DIRECTOR OF PROFESSIONAL SERVICES: Large affiliated VA General Hospital. Certified specialist with more than casual experience in residencies and research and a flair for administration. Faculty appointment appropriate for qualifications. Active expanding research programs. Ambitious, mature personality. Salary $15,789–$17,200. Address: V-99.

PHYSIATRIST: Board certified, mature personality, Chief, Physical Medicine and Rehabilitation Service, large affiliated general VA Hospital, Southwest. Challenging residency and research programs. Qualified for professorial appointment. Salary $15,789 to $17,200. Address: V-100.

PSYCHIATRIST-DIRECTOR: For new 39-bed adult inpatient service in 350-bed, medical school-affiliated, acute general hospital. Should be Diplomate or Board eligible. Planning resident training, research and service programs; dynamic orientation with psychotherapy as primary therapeutic approach. Excellent voluntary staff prepared to cooperate actively. Eligibility for Michigan licensure required. Position would be full-time; salary commensurate with candidate's qualifications. Write, including curriculum vitae, to Julien Priver, M.D., Director, Sinai Hospital of Detroit, 6767 W. Outer Drive, Detroit 35, Mich.

INTERNIST: Young, to serve full-time as assistant chief of service in university affiliated, all charity hospital recently opened. Faculty status. Salary $10,000. Address inquiries to Dean, Louisiana State University School of Medicine, 1542 Tulane Avenue, New Orleans 12, La.

MEDICAL ARTIST: Full-time position for a formally-trained medical artist in a medical school serving all departments. Recent graduate preferred. Salary according to qualifications. Address: Professor J. V. Basmajian, Department of Anatomy, Queen's University, Kingston, Ontario, Canada.

NEUROANATOMIST-NEUROPHYSIOLOGIST: Research associate in neurology to work full time on research project. Teaching opportunities optional. Duration three years at salary of $6000 plus, depending on experience and degrees. Write giving curriculum vitae to Dr. W. T. Niemer, Vice-Chairman, Department of Anatomy, The Creighton University School of Medicine, 302 N. 14th St., Omaha 2, Nebraska.

VIROLOGIST: To associate with studies on the epidemiology of virus diseases. Research and teaching position in medical school in mid-South. Opportunity for independent work. Ph.D. or M.D. Salary and rank according to qualifications. Address: V-101.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

ANATOMIST: M.B., Ch.B. (Witwatersrand, Johannesburg, South Africa), F.R.C.S. (Edinburgh). Age 52, desires position in medical school as senior lecturer in anatomy. Presently located at University of The Witwatersrand as official lecturer in anatomy; part-time senior lecturer in gross and applied anatomy since 1949. Publications. Surgeon to Union Defence Forces, 1940–46 with rank of major. In private practice as a general surgeon since 1946. Address: A-428.

PHARMACOLOGIST-CLINICAL: M.D., Ph.D., age 33, licensed physician. Publications, academic and industrial experience, some psychiatric training. Desires teaching position. Address: A-430.

HUMAN GENETICIST: Ph.D., age 36, seven years experience at leading human genetics center, including heredity clinic service, population surveys of hereditary traits, and statistical analyses. Fourteen publications. Desires permanent university position, preferably research and teaching. Address: A-431.

CERTIFIED INTERNIST: Age 38, experienced in diabetes, endocrinology, radioisotopes (licensed by AEC). Several years direction of medical residency training program, and radioisotope unit in large teaching hospital, and Assistant Professor of Medicine in charge of student diabetes clinics. Now in private practice. Desires return to full-time teaching hospital and/or medical school. Address: A-433.

PHYSIOLOGIST-BIOCHEMIST: Ph.D. Faculty member medical school. Interdisciplinary major grant research program (3 technicians) in basic and clinical aspects of endocrine physiology, metabolism, biochemistry. Publications, societies, radioisotope experience, training in statistical design. References. Desires faculty career appointment teaching physiology and/or biochemistry with facilities and climate to develop research program. Address: A-435.

INTERNIST: M.D., age 35. Currently on faculty of Eastern medical school. Experience in private practice and industrial medicine. Eight months experience and training in psychiatry. Desires faculty appointment with opportunity for clinical investigation in cardiovascular diseases, as well as teaching general medicine in teaching hospital. Address: A-436.

PHYSIOLOGIST: Ph.D., leading university. Well trained in biological, physical and chemical sciences. Highest scholastic honors, scholarships, former National Research Council Fellow. Well developed research program on the physiology of growth and aging. Offices held in national scientific societies. Present appointment, associate professor in medical college. Currently in charge of teaching. Seeking appointment with major administrative-teaching responsibilities, with opportunity to continue expanding research study, preferably in the West. Minimum entering salary $12,000. Available Fall, 1960. Address: A-438.

PEDIATRICIAN: Professor and department head. Wishes to relocate for personal reasons. Ten years at present post. Age 43. Numerous publications. Would first consider university or educational foundation position; then, hospital educational program or industry affiliation. Address: A-439.

SURGEON: Cardiovascular and thoracic. M.D. 1947 American medical school. Presently located at Canadian hospital as research fellow in cardiovascular surgery. Desires position in thoracic and cardiovascular surgery, either at clinical level, or in teaching and research. Diplomate, American Board of Surgery. Address: A-440.

HISTOLOGIST-ENDOCRINOLOGIST: Also histochemist-electron microscopist. Age 32; Ph.D., Harvard. Publications, grants and cancer research. Six years teaching experience in histology, embryology and histochemistry. Desires associate professorship or full time research position in a medical school in department of anatomy, biochemistry, pathology or allied clinical science. Address: A-441.

INTERNIST-HEMATOLOGIST: Age 37, Board certified. Interested in all phases of clinical, laboratory, and research hematology, seeking academic position. Experience includes 6 years academic type practice in internal medicine and hematology; brief private practice; research during military service. Address: A-442.

PHYSIOLOGIST-PHARMACOLOGIST: Ph.D., 1954. Male, family. Eleven years teaching experience, currently teaching physiology in dental school. Desires academic position with or without research opportunities. Address: A-444.

ANATOMIST: M.B.B.S., University of Karachi, 1955. Four years teaching experience. Currently with anatomy department in a Pakistan medical school. Desires anatomy instructorship in medical school or university, preferably in northern United States, and opportunity to do summer graduate work. Address: A-445.

INTERNIST: Age 33; certified in medicine. Trained in clinical medicine, teaching and research at university hospital and the N.I.H. Director of medical education at university affiliated hospital in New York City for past three and one-half years. Experience in private practice and epidemiology. Desires geographic full-time position at medical school or hospital, with opportunities for teaching and research as well as consultation and limited practice privileges. Address: A-446.

PREVENTIVE MEDICINE PHYSICIAN: M.D., M.P.H. and Dr. P.H. Desires teaching position on medical school faculty. Numerous publications. Previous teaching and health department experience. Special interests are epidemiology, biostatistics, and preventive medicine. Address: A-447.

BACTERIOLOGIST-IMMUNOLOGIST: Ph.D. Married, family. Eleven years experience in clinical bacteriology, serology, and blood grouping and as Director of the blood bank. Extensive teaching experience at medical school level. Publications. Desires hospital position with research potential and university faculty status. Address: A-449.

PHYSICIAN: M.Sc., M.D., age 38, presently on staff of Australian university, desires teaching position in department of medicine at American university. Trained in England and United States. Numerous publications; broad background. Speciality, cardio-vascular diseases. Address: A-450.

PEDIATRICIAN-PUBLIC HEALTH: M.D., M.P.H., Past experience includes private clinical practice, teaching preventive medicine and school health. Fellow, American Academy of Pediatrics. Desires part-time position in public or student health with academic affiliation. Address: A-451.

ADMINISTRATOR: M.D., age 36. Five and one-half years in administration of large federal medical education program and government medical research contracts. Graduate training in clinical pathology. Desires administrative post in medical school, preferably with opportunity for teaching and research. Address: A-452.

EDUCATIONAL DIRECTOR: Surgeon, with seven years' university and administrative experience as assistant professor and director of a large multi-service residency program in a Veterans Administration hospital. Position sought in a university or community hospital, full or part-time, with access to research facilities. Address: A-453.

PATHOLOGIST: Federal pathologist desires chairmanship of department or professorship of anatomic pathology in a university medical school or affiliated civilian general hospital. Currently conducting research which would continue; contributor to medical texts and journals. Availability of space, facilities, full-time personnel and opportunity to teach medical students and train residents deciding factors in accepting a position. Address: A-454.

PHYSIOLOGIST-PHARMACOLOGIST: M.S., Ph.D., age 32, married, 2 children. Nine years training and research experience in physiology and pharmacology, with specialization in cardiac electrophysiology and pharmacology. Former National Heart Institute and American Heart Association research fellow. Desires academic, hospital, or affiliated research institute research appointment with opportunity to initiate and organize own research program in cardiovascular pharmacology and physiology. West Coast location desired. Address: A-455.

INTERNIST: M.D., age 40. Experienced in teaching, clinical investigation (metabolism), patient care, and administration. Desires full-time post with teaching hospital—medical school. Address: A-456.

EXFOLIATIVE CYTOLOGIST: M.D., with 12 years' training. University experience in teaching and research (cytohistochemistry). Desires appointment in a university department or in cancer institute with exfoliative cytology program and opportunities for research. Address: A-457.

PHARMACOLOGIST: M.D., Ph.D., age 36, married. Seven years teaching and research experience in structure-activity-relationships. Desires academic position with facilities and atmosphere conducive to develop research program. Address: A-458.

GENERAL SURGEON: M.D., F.R.C.S.(C). Board eligible. Excellent references. Age 35. Teaching experience in anatomy, pathology and surgery. Desires association with hospital, medical school, or group with part-time teaching responsibilities. Address: A-459.

PATHOLOGIST: Age 36. Certified in clinical and anatomical pathology, presently on medical school faculty. Desires to combine service with teaching or hospital educational program. Address: A-460.

PHYSIOLOGIST: Ph.D., male, age 31, 1958 graduate with teaching experience in medical schools. Interested in academic position in medical school with research opportunities. Present rank, Assistant Professor. Currently on NIH research grant. Available fall 1961 (possibly spring 1961). Address: A-461.

INTERNIST: F.A.C.P., age 43. Consulting physician in large Eastern charity hospital desires full-time position in department of medicine at Professor of Clinical Medicine level. Primarily interested in metabolism but will consider other sections. Broad training in most subspecialties; basic experience with isotopes. Extensive clinical investigation. Numerous publications since 1947. Diplomate American Board Internal Medicine. Address: A-462.

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1. Clein, N. W.: Pediat. Clin. North America, Nov., 1954, pp. 949-962.

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